Arboriculture in the Punjab, Progress report

1884-85 to 1892-93

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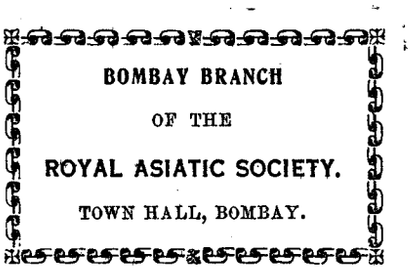

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PROGRESS REPORT

ON

ARBORICULTURE IN THE PUNJAB

For the year 1884-85.

LIBRARY OF THE BOMBAY BRANCH OF THE ROYAL ASIATIC SOCIETY

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No. 504.

FROM

W. R. LAWRENCE, ESQUIRE,

Under-Secretary to Government, Punjab,

Revenue Department,

To

H. C. HILL, ESQUIRE,

Offg. Conservator of Forests, Punjab.

Dated Lahore, 11th November 1885.

Forests.

SIR,

I AM directed by the Lieutenant-Governor to acknowledge the receipt of your letter No. 1104 of the 8th of October 1885, submitting tabular statements, with brief notes, on the subject of the progress of arboriculture in the Punjab during 1884-85, and in reply to convey the following remarks.

2. It is to be regretted that on the first occasion of the submission of this abridged and simplified form of report any delay should have been allowed to occur, and that the omission of statements of income and expenditure for six districts should have rendered the returns incomplete for the purpose of comparison with those of previous years. It is not understood why the further information required in the present case was not called for by the Commissioners of Divisions or by you when the district returns reached your office ; and I am to request that steps may be always taken in future to complete the Provincial statements in all respects before they are published and submitted to Government.

3. The rain-fall of the year appears to have been above the average on the whole, and the progress made in the planting of avenues is fairly satisfactory : 1,840,373 feet of single lines have been planted during the year. In Muzaffargarh there has been a considerable addition, and in the other arid districts a commendable activity has been shown in planting avenues. Among the dry districts the progress made in Rohtak is noticed, while among the Forest districts it is observed that cultivation has failed, or trees or established plants have died on 914,033 feet in the Kángra district. An explanation of this heavy loss should be obtained from the Deputy Commissioner, and entered in the brief explanatory notes of the statements for the current year.

4. An area of 50 acres has been planted with groves during the year, but as the returns for several districts are blank, it may be hoped that this area does not represent the entire operations of the Province, especially as 607 acres were planted in the Rohtak district alone. In the review on the Arboricultural Report for last year special attention was called to the importance of establishing nurseries throughout the Province, and it might fairly have been expected that a much larger area would have been sown or planted during the year than is shown to be the case by the returns.

5. If the income obtained in the year 1883-84 in the five districts for which the statements of 1884-85 are blank be added to the total income reported, a total of Rs. 51,948 is obtained, which exceeds the total income for the preceding year, which was Rs. 50,944.

Similarly, if the expenditure incurred in these five districts during 1883-84 be added to the expenditure reported for 1884-85, a total expenditure of Rs. 1,24,262 is obtained, which is considerably less than that of the year preceding, which was Rs. 1,39,804.

6. The progress statement for the Canal divisions is incomplete, but the extent of planting operations during the year appears to have been inconsiderable. It is not understood why difficulty is experienced on the Bári Doab Canal Circle in submitting the prescribed returns, and the Joint-Secretary to Government, Irrigation Department, has again been addressed on this point. The total length of single lines planted on provincial roads during the year, *viz.*, 1,204,741 feet, is satisfactory, and compares favourably with the length planted during 1883-84, which was 539,852 feet.

7. In conclusion, I am to express a hope that every effort will be made in future to render the arboricultural tables complete in all respects and to submit them punctually upon the prescribed date. In your forwarding letter all instances of late submission of the statements to your office should be brought to the notice of Government.

I have, &c.,

W. R. LAWRENCE,

Under-Secretary to Government, Punjab,

Revenue Department.

Punjab Government Press, Lahore—28-11-85—160.

No. 1104.

FROM

H. C. HILL, ESQUIRE,

Officiating Conservator of Forests, Punjab,

To

THE JUNIOR SECRETARY TO GOVERNMENT,
PUNJAB.

Dated 8th October 1885.

SIR,

I have the honor of submitting herewith, in compliance with your No. 552, dated 16th December 1884, ten tabular statements, with notes in column of remarks, showing the progress of arboriculture in the Punjab during the year 1884-85.

2. Progress statements of avenues have not been received for the Bári Doáb Canal Circle, and it is explained by the Superintending Engineer that reports having been drawn up on the model of North-West Provinces report, these statements cannot now be prepared.

3. Statements of income from, and expenditure on, district arboriculture are wanting from the Jhang, Ludhiána, Amritsar, Hoshiárpur, Hazára and Kángra districts.

4. Owing to the Committee, referred to in para. 10 of Resolution No. 615 S, dated 7th October 1884, not having assembled, no new form of report has been adopted, and the present statements have been compiled in accordance with the usual prescribed forms.

They are as follows :—

1. Statement of rainfall.
2. Do. of avenues.
3. Do. of groves.
4. Do. of nurseries.
5. Do. of income realized in districts.
6. Do. of expenditure on arboriculture operations.
7. Do. of avenues planted in Canal divisions.
8. Do. of Canal income.
9. Do. of Canal expenditure.
10. Do. of avenues planted on provincial roads.

I have, &c.,

H. C. HILL,
Offg. Conservator of Forests, Punjab.

TABLE No. I.

Table showing Rainfall during the year 1884-85.

District.	Tahsil.	Average.	During the year.	Remarks.
I.—Arid.		*Inches.*	*Inches.*	
Shahpur	...	...	12·6	
Mooltan	Mooltan	...	7·7	
	Shujabad	...	8·2	
	Lodran	...	7·1	
	Mailsi	...	4·8	
	Sarai Sidhu	...	7·7	
Jhang	...	7·58	9·4	
Montgomery	Montgomery	*10·2	12·5	*For 5 years.
	Pakpattan	8·2	8·7	
	Dipalpur	9·0	12·2	
	Gugera	11·0	7·4	
Muzaffargarh	Muzaffargarh	...	8·1	
	Alipur	...	6·3	
	Sanawan	...	9·8	
Dera Ismail Khan	Dera Ismail Khan	...	·416	
	Tank	...	·325	
	Leiah	...	1·05	
	Bhakkar	...	·675	
Dera Ghazi Khan	...	*7·1	10·1	*For 5 years.
Bannu	...	10·3	11·5	
II.—Very Dry.				
Hissar	Hissar	14·1	17·1	
	Hansi	...	18·2	
	Bhiwani	...	20·5	
	Fatehabad	...	23·7	
	Barwala	...	18·6	
	Sirsa	...	*2·6	*For 5 months.
Kohat	...	18·18	18·1	
Peshawar	Peshawar	15·6	15·6	
	Mardan		27·2	
	Hastnaggar		11·5	
Ferozepore	Ferozepore	2·4	29·2	
	Zira	1·3	15·7	
	Moga	1·5	17·5	
	Mukhtsar	·8	9·2	
	Fazilka	·5	6·7	
Karnal	Karnal	*24·7	44·8	*For 5 years.
	Panipat	22·1	27·6	
	Kaithal	17·6	20·0	
Rohtak	...	17·4	24·3	
III.—Dry.				
Lahore	...	...	...	Not given.
Ludhiana	...	28·03	29·7	
Jullunder	...	26	28	
Amritsar	Amritsar	26·61	23	
	Tarn Taran	23·7	28·2	
	Ajnala	20·54	16·9	
Gujranwala	Gujranwala	22·5	21·1	
	Wazirabad	21·5	25·4	
	Hafizabad	18·3	15·9	
Delhi	Sonipat	28·7	35·4	
	Ballabgarh	26·1	25·7	
	Delhi	34·3	41·7	
Gurgaon	Gurgaon	21·3	31	
	Núh	23·1	27·5	
	Palwal	23·9	30·4	
	Firozpur	21·25	36·1	
	Rewari	22·4	19·1	
Jhelum	Jhelum	23	26	
	Pind Dadan Khan	17·5	12	
	Chakwal	15	26·7	
	Talagang	17	22·1	
IV.—Forest Districts.				
Sialkot	Sialkot	38	31	
	Pasrur	36	34	
	Daska	29	26	
	Zafferwal	35	31	
	Riah	24	20	
Gurdaspur	Gurdaspur	31·80	46·13	
Gujrat	Gujrat	22·8	19·9	
Hoshiarpur	Hoshiarpur	35·87	31·0	
	Dasuah	37·13	42·7	
	Garshankar	33·26	29·4	
	Una	39·14	43·0	
Rawalpindi	Rawalpindi	...	37·8	
	Fattejang	...	32·2	
	Pindigheb	...	16·8	
	Attock	...	20·7	
	Gujar Khan	...	34·4	
	Kahuta	...	55·5	
Hazara	...	43·8	53	
Umballa	...	29·4	48·4	
Kangra	Nurpur	78·84	63·2	
	Kangra	72·85	59·0	
	Hamirpur	53·0	55·51	
	Dehra	65·31	44·8	
	Palumpur	111·72	114·4	
	Kulu	40·0	37·1	

TABLE No. II.

Progress Statement of Avenues planted in the Districts of the Punjab during the year 1884-85.

Districts.	I. Road or canal on which avenues have been planted or are in course of construction. *Total length in feet.*	II. Length of single lines stocked with trees or established plants at the beginning of the year. *Feet.*	III. Length of single lines planted during the year. *Feet.*	IV. Length of single lines on which cultivation has failed or on which trees or established plants have been destroyed. *Feet.*	V. Length of single lines stocked with trees or established plants at the close of the year. *Feet.*	VI. Species of trees cultivated.	VII. Remarks.
I.—Arid.							
Shahpur	19,39,402	14,48,807	61,456	32,028	14,78,235	Kikar, ber, siris, tut, shisham, pipal, mangoes, bakain, jaman, farash.	The figures now given are said to be correct, the distances in column II have been carefully measured.
Multan	12,37,856	1,63,728	38,114	2,875	1,98,967	Siris, shisham, pipal, bor, kikar, ukan, bakain, ber, mangoe, jaman.	All the roads in this District are planted with single avenues of trees.
Jhang	13,96,560	2,55,140	9,280	1,380	2,63,040	Shisham, siris, ber, kikar, tut, pipal, banyan, tamarisk, date, amaltas, phulai, jhand, jaman and barna.	20 trees died on the station roads and were replaced by others. 40 gaps were filled up on the road from Jhang to Shahpur, 8 trees died; 123 trees were newly planted on the road from Jhang to Kharora, of which 3 died; 180 trees were planted on the road from the Sadr to Khatu Shah, 3 died; 80 gaps were filled up on the road from the Sadr to Atharam Hyari. The trees planted last year on the sandy part of the road between Jhang and Meghiana failed entirely and were replaced by others. 231 trees were replanted on the road from Khiwa to the Gujranwala District boundary, and 17 trees on the road from Chinot tahsil to the Dispensary.
Montgomery	4,80,500	79,200	5,280	...	84,480	Sharin, tut, kikar, ber and shisham.	
Muzaffargarh	21,40,440	5,21,780	1,92,720	10,865	7,03,635	Shisham, farash, mulberry.	Double lines of trees are planted on both sides of the road from Ganeshwa bridge to the Taliri garden, and on the customs road *via* Umarpur to Kurashi; 21,680 trees are planted on one side and 2,000 on the other.
Dera Ismail Khan	12,77,760	3,25,720	25,653	6,337	3,45,036	Shisham, tamarisk, sarin, ber, bhani.	9,267 trees, on an aggregate length of 25,653 feet, were planted during the year; 460 trees or established plants, covering a length of 6,337 feet, were destroyed or felled; the remaining trees of the present and of the previous years' sowings are doing well.

Dera Ghazi Khan	16,42,080	4,11,840	31,680	...	4,43,520	Shisham, kikar, siris, mangoe, nim, eucalyptus, jaman, toon, mulberry, carob, mesquit, pomegranate, &c.	Nearly all the avenues in this district are doing well. Area stocked at beginning of year now correctly shown.
Bannu	6,41,071	3,98,787	50,926	13,491	4,36,222	Kikar, ber, shisham, mulberry, willow, khagal.	
II.—VERY DRY.							
Hissar	10,89,160	2,94,537	...	...	2,94,537	Kikar, shisham, pipal, mulberry.	The lengths of existing avenues were carefully verified, and the actual lengths are now put down. The measurements shown in last year's returns were again verified and errors detected and corrected. The establishment was employed in filling gaps and looking after trees planted in previous years. Includes part of the Sirsa District.
Kohat	12,000	4,200	6,150	3,780	6,570	Shisham, sarin, mulberry, eucalyptus, ber, and tut.	Many trees died owing to the incessant rain, which lasted from the end of March to the end of May 1885. Includes a new road.
Peshawar	6,67,920	1,90,145	57,180	23,670	2,23,655	Shisham, mulberry, pipal, ber, willow, ghaz, dhrek, siris and phulai.	In the Peshawar Tahsil all the roads are planted with double lines of trees; in some cases the length of line has been reduced by destruction of trees. In the Mardan Tahsil the length of stocked line is generally continuous in long sections.
Ferozepore	38,63,640	23,11,320	18,480	...	23,29,800	Kikar, farash, beri, tut and tali.	Some of the roads have single lines, some double lines of trees on each side of the road. Includes part of the Sirsa District.
Karnal	12,75,980	3,05,140	228	...	3,05,368	Shisham, siris, nim, tut, jaman, and pipal.	2,368 trees died, 2,053 gaps filled up, 315 gaps left.
Rohtak	18,45,360	5,02,810	1,01,003	1,408	6,02,405	Shisham, nim, farsh, kikar, tun, siris, katchnal, mangoe.	Double line of trees on each side of roads. Columns I & II include new roads.
III.—DRY.							
Lahore	17,89,920	3,74,880	80,960	10,560	4,45,280	Shisham, kikar, rehru, tut, farash, sharain, and jaman.	In the Lahore Tahsil 3 miles of the road from Lahore to Hurreki was planted with new trees, gaps being filled up over 2 miles. In the Kasur Tahsil ½ of a mile of the road from Khem Kharn to Patti was planted with new trees. In the Chunian Tahsil an addition of ½ a mile was made to the line already existing on the road from Chunian to Veram, an additional ¼ of a mile was planted on the road from Chunian to Van Radha Ram; the line of road running from Chunian to Bhai Pheru was extended by ½ a mile; ¼ of a mile of new avenue was planted on the road from Changa Manga to Raiwind; 1 mile on the road from Doburji to Bassaki; ½ a mile on the road from Chunian to Bahrwal, and 2½ miles of entirely new avenues were planted on the Clarkabad road. Gaps were filled up where necessary. In the Sharkpur Tahsil an additional mile was planted on the road from Rajghat to Bucheki, and 2 miles on the road from Sharakpur to Sheikupura. Columns I and II include new roads.
Ludhiana	5,49,120	5,28,000	2,560	...	5,30,560	Shisham, jaman, siris, bar, pipal, and mulberry.	Half a mile of the road from Jagraon to Galib was planted with 200 new trees; 3,521 trees planted on roads where there were gaps; 250 young trees planted round the tank at Chapar. Column I includes new roads.
Carried over ...	2,18,48,769	81,16,034	6,81,670	1,06,394	86,91,310		

TABLE No. II.—*concluded.*

Progress Statement of Avenues planted in the Districts of the Punjab during the year 1884-85.—concluded.

Districts.	I. Road or canal on which avenues have been planted or are in course of construction.	II. Length of single lines stocked with trees or established plants at the beginning of the year.	III. Length of single lines planted during the year.	IV. Length of single lines on which cultivation has failed or on which trees or established plants have been destroyed.	V. Length of single lines stocked with trees or established plants at the close of the year.	VI. Species of trees cultivated.	VII. Remarks.
	Total length in feet.	*Feet.*	*Feet.*	*Feet.*	*Feet.*		
Brought forward ...	2,18,48,769	81,16,034	6,81,670	1,06,394	86,91,310		
Jullundur	7,97,400	14,10,580	63,360	...	14,73,940	Shisham.	1,345 trees were planted on 2 miles of the road from Jullundur to Tandah; 528 trees on 1 mile of the road *via* Talwan and Bhundri ferry; 2 miles of the road from Phillour to Sumrai *via* Rurka were planted with 1,300 trees; and 1 mile of the road from Phillour to Kalartha was planted with a single avenue of 514 trees. 7,205 trees were planted to fill in gaps. Columns I and II, corrected figures entered.
Amritsar	12,83,040	...	...	...	...	Shisham, tut, jaman, siris, nim, bohar, pipal, mangoe.	7,370 trees were planted on road sides.
Gujranwala	19,03,440	5,59,680	26,400	13,200	5,72,880	Shisham, kikar, phurwan, mulberry, siris.	The avenue on the road from Gujranwala to Sheikupura was extended by 1 mile, 284 trees were planted; on the road from Gujranwala to Dinanuggur 325 trees were planted over an extension of 1 mile; on the road from Wazirabad to Dhaunkal 275 trees were planted over an extension of 1 mile; ½ a mile of avenue on this road failed. On the road from Sheikupura to Kadarabad 2 miles of avenue were planted with 1,011 trees. 2,048 trees were planted to fill gaps on the road from Gujranwala to Hafizabad; and 825 gaps and blanks were filled on the road from Gujranwala to Sialkot. Columns I and II include new roads.
Delhi	11,61,690	5,40,934	1,38,894	8,000	6,71,828	Shisham, nim, siris, gullar, jaman, mulberry, kikar, mangoe, bakain, pipal, khatta.	275 trees were planted on each side of the Soniput Bahalgarh road and are flourishing; kikar seed was also sown in continuation of the line of trees and 4,000 plants raised. On the Murthal Soniput road 125 trees were planted on each side of the road, kikar seed was also sown and about 3,000 plants raised; 6,000 kikar plants were also raised on the Jhundpur Bahalgarh road; 100 trees were planted in continuation of the existing avenue on the Bahadarpur Tughlukabad Dak Bungalow road. All avenues are reported to be thriving. Column I includes new roads.

Gurgaon	14,49,360	10,98,200	5,000	...	11,03,200	Shisham, nim, siris, jaman, kikar, gular, pipal, farash.	Work done during the year consisted of filling up gaps and tending former plantings. Columns I and II include new roads.
Jhelum	10,35,760	6,64,540	1,41,690	36,190	7,70,040	Shisham, kikar, mulberry, bakain.	Avenues are planted on road sides. Difference in figures of 1883-4 and 1884-5 owing to several roads in Chukwal Tahsil having been planted with trees during the year.
IV.—Forest Districts.							
Sialkot	38,25,360	24,80,280	1,49,530	69,460	25,60,350	Dalbergia, sissu, acacia spicasa, mulberry, acacia arabica, zizyphus jujuba, acacia modesta, bahera, shisham, pipal.	Single or double avenues on all the roads in this District; a good deal of damage was done to the trees by storms.
Gurdaspur	7,35,079	6,13,768	24,229	13,400	6,24,597	Shisham, mulberry, mangoe, jaman, kikar, siris, ber, dhrek, phulah, lasura, bar, pipal, simal, phaguri.	Single avenues on all roads in this District.
Gujrat	4,52,000	3,53,500	16,500	...	3,70,000	Shisham ...	Single avenues on all roads in this District. The planting done during the year was merely to replace old trees that had died in the previous year. The main work was the replanting of 10,000 feet of the road from Gujrat to Sadullapur, which had not been attended to for years. Columns I and II include a new road.
Hoshiarpore	23,63,460	18,74,400	8,655	...	18,83,055	Tun, mangoe, pilkhan, bahera, jaman, eucalyptus, patayan, pipal, bar, shisham, arjun, gumbar, khirni, maulsari, hirak, dheo, jack, &c.	The avenues in the Hoshiarpur District are not continuous, but are intersected in various places by torrents, khuds and ravines. Column I includes new roads.
Rawalpindi	48,83,368	19,82,293	1,91,142	1,43,431	20,30,004	Shisham, mulberry, kikar, phula, dhrek, ber, cao, bor, lasura, phagwara.	All the roads in this District are planted with single avenues of trees. Most of the work done during the year was in filling gaps. Cols. I and II include new roads.
Umballa	18,10,080	11,14,169	61,401	44,126	11,31,444	Shisham, nim, lasura, jaman, mulberry, tun.	Single avenues on the roads in this District.
Hazara	10,08,615	3,17,341	4,782	...	3,22,123	Shisham, mulberry, bakain, tamarix, siris, kikir, willow.	Nothing done during the year except filling-in of gaps. It is useless extending the avenues in this District unless there is an efficient establishment kept up to look after them.
Kangra	28,48,355	39,45,141	3,27,120	9,14,083	33,58,178	Mulberry, tun, mangoe, shisham, karal, ber, simbal, dhrek, khirk, bamboo.	The work done during the year consisted mainly in filling gaps where trees had been destroyed in previous year.
Simla	1,500	1,500	...	...	1,500	Mango, mulberry, tun, jaman.	142 trees planted in the Kalka Bazaar.
Total ...	4,74,07,276	2,50,72,360	18,40,373	13,48,284	2,55,64,449		

TABLE No. III.

Progress Statement of Groves planted in the Districts of the Punjab during the year 1884-85.

Districts.	I Area on which groves have been planted or are in course of construction. *Total area in acres.*	II Area stocked with trees or established plants at the beginning of the year. *Acres.*	III Area planted during the year. *Acres.*	IV Area on which cultivation has failed or on which trees have been destroyed or felled. *Acres.*	V Area stocked with trees or established plants at the end of the year. *Acres.*	VI Species of trees cultivated.	VII Remarks.
I.—Arid.							
Shahpur	252 0 20	202 0 16	7 2 17	3 1 30	206 1 3	Shisham, kikar, firs, bamboo, tut, willow and poplars.	Includes new groves not entered before.
Mooltan	...	...	...	...	...	Carob, Bombay shah pasand, sufeda mangoe, grevillea, robusta, eucalyptus, shisham, bor, pipal, jaman, alucha, and aru.	16,163 trees at beginning of year, 2,800 transplanted during the year.
Jhang	376 3 22	362 1 22	0 2 0	32 0 2	330 3 20	Mangoe, banyan, pipal, ber, shisham, willow, grape, fig, symbul, apple, eucalyptus, pomegranate, oranges, bed mushk, barna, alucha, peach, tut, apricot, date, phulahi, kikar, jand, tamarisk, &c.	250 trees received from Lahore were planted in the station garden, 31·74 acres of land, and 4,401 trees were lost by river action at Chak Sajhowal, and 275 acres with 30 trees from Bela Bagar.
Muzaffargarh	151 2 17	149 2 17	3 2 0	1 2 0	151 2 17	Shisham.	
Montgomery	22 1 20	22 1 20	...	...	22 1 20	Not given.	
Dera Ismail Khan	...	11 0 0	...	...	11 0 0	None planted.	
Dera Ghazi Khan...	146 2 0	121 2 0	25 0 0	...	146 2 0	Shisham, siris, eucalyptus, mangoe, nim, tun, mulberry, carob, mesquit, pomegranate, peaches & figs.	Col. I includes a new grove.
Bannu	...	...	...	...	...	...	

II.—Very Dry.						
Hissar	52 2 15	52 2 15	...	...	52 2 15	Orange, lemon, pomegranate, shisham, tun, kikar, mangoe and pipal.	2,370 fruit and other trees planted, of which 700 died. Cols. I and II include new groves.
Kohat	15 1 20	1 1 0	...	...	1 1 0	Shisham, tut, eucalyptus.	The grove on the circular road was replenished.
Peshawar	...	...	...	...	...	...	
Ferozepore	462 0 25	324 2 25	4 0 0	...	328 2 25	Shisham, kikar and farash, &c.	Corrected figures entered in cols. I and II.
Karnal	311 1 10	311 1 10	...	...	311 1 10	Shisham, siris, nim, tut, jaman, pipal.	These contain 1,780 trees.
Rohtak	711 1 5	103 2 10	607 2 35	...	711 1 5	Shisham, kikar, nim, siris, mulberry, pipal, bakain, lasura, and mangoe.	These so-called "groves" are plots of land in which seed sowing has been carried out with the object of developing groves hereafter.
III.—Dry.							
Lahore	...	...	...	...	...	...	
Ludhiana	...	...	...	...	...	...	250 trees planted at the Tank and 147 in the Tahsil garden.
Jullundur	...	...	...	...	...	...	
Amritsar	...	...	...	...	...	...	41,927 trees planted during the year.
Gujranwala	...	...	...	...	...	...	
Delhi	15 0 24	...	...	...	...	Kikar, nim, eucalyptus, bakain, shisham, jaman, mulberry, siris, pipal, tun, gular and pomegranate.	4,300 trees at beginning of year; 4,129 at end of year.
Gurgaon	...	...	...	...	...	...	
Jhelum	1 0 0	...	0 0 27	...	0 0 27	Fruit trees ...	Planted in garden at Choya Sadaun Shah and Dalelpur.
IV.—Forest Districts.							
Sialkot	169 2 23	22 2 0	1 2 20	0 2 0	23 2 20	...	Mangoe trees planted at the encamping ground at Kaluwal, Dhamthal and Dharmkot, and in the Sialkot garden.
Gurdaspur	31 2 11	31 2 11	0 0 15	0 0 15	31 2 11	Shisham, mulberry, siris, orange, pomegranate.	Corrected figures now entered in cols. I and II.
Gujrat	...	...	...	...	...	...	
Hoshiarpur	...	...	...	...	...	...	
Rawalpindi	29 0 0	...	...	...	...	...	
Hazara	70 0 0	70 0 0	...	...	70 0 0	Aru, bihi, anar, orange, gond, maju, hari, alucha, apple, alubukhara, mango, sangtara and deodar.	Trees are raised here for distribution.
Umballa	...	...	...	...	...	...	
Kangra	...	...	...	...	...	...	
Simla	...	...	...	...	...	Apple, pear, peach, apricot, figs and chestnuts.	4,763 fruit trees were planted during the year at Mahasu.
Total	2,818 2 12	1,786 1 26	650 0 34	37 2 7	2,399 0 13		

TABLE No. IV.

Progress Statement of Nurseries planted in the Districts of the Punjab during the year 1884-85.

Districts.	I Total area of land set apart for nurseries.	II Area stocked with plants at the beginning of the year.	III Area sown or planted during the year.	IV Area on which cultivation has failed or from which plants will be removed.	V Area stocked with trees or established plants at the end of the year.	VI Species of trees cultivated.	VII Remarks.
	Acres R. P.	*Acres R. P.*	*Acres R. P.*	*Acres R. P.*	*Acres R. P.*		
I.—Arid.							
Shahpur ...	1 1 22	1 1 17	...	...	1 1 17	Mangoe, pomegranate and almonds.	Corrected figures entered in col. II.
Mooltan ...	...	...	...	...	...	...	
Jhang ...	0 2 0	...	0 2 0	...	0 2 0	Mangoe, gulnister, siris and vine.	A nursery containing 2,502 trees was established at Shorkot.
Montgomery ...	...	...	...	...	...	...	
Muzaffargarh ...	29 2 2	28 2 2	...	...	28 2 2	Shisham. ...	Young nurseries are plentiful, but some are inconveniently far from the roads it is intended to plant; this will be remedied. It is proposed to plant 6 miles of main road every planting season.
Dera Ismail Khan ...	...	...	...	...	...	...	
Dera Ghazi Khan ...	5 3 0	4 2 0	1 1 0	...	5 3 0	Shisham, kikar, mangoe, jaman, firs, mulberry, plums, peaches, lime, oranges, &c.	
Bannu ...	...	...	...	...	...	...	
II.—Very Dry.							
Hissar ...	14 2 11	14 1 11	0 1 0	...	14 2 11	All kinds of forest trees, and kikar.	1,600 trees planted; 450 died.
Kohat ...	...	...	...	...	...	...	
Peshawar ...	...	...	...	...	...	...	
Ferozepore ...	...	...	...	...	...	...	
Karnal ...	8 2 5	8 2 5	...	...	8 2 5	Various sorts. ...	5,800 plants fit for transplanting.
Rohtak ...	1 1 23	1 1 23	...	...	1 1 23	Shisham, nim, amaltas, mulberry, mangoe, kikar, &c.	25,369 plants at the close of the year.
III.—Dry.							
Lahore ...	...	...	...	...	...	...	
Ludhiana ...	...	...	...	...	...	...	
Jullundur ...	7 0 33	4 1 6	2 1 30	...	6 2 36	Shisham. ...	There are 21 nurseries in this district, and as they are well stocked with trees, very little was done during the year.
Amritsar ...	...	...	...	...	...	...	
Gujranwala ...	3 0 0	...	...	...	...	...	Establishment kept up as usual for maintenance of road-side trees.
Delhi ...	1,209 2 19	...	...	...	...	Shisham, siris, jaman, nim, kachnal, mulberry, kikar, ber, pipal, khatta, gular, mangoe, and pomegranate.	91,127 trees at beginning of the year; 6,956 planted during the year, of which 350 died.
Gurgaon ...	...	...	...	...	...	...	
Jhelum ...	...	...	...	...	...	...	
IV.—Forest Districts.							
Sialkot ...	14 2 8	7 3 0	2 0 20	1 2 20	8 1 0	Mangoe, bahera, amaltas, siris, and mulberry.	

Gurdaspur	...	26	0	0		8	0	0		1	0	29		0	0	29		9	0	0	China, mulberry, anar, shisham, orange and siris.	
Gujrat	...	...				...				...				...				...			...	
Hoshiarpur	...	...				...				...				...				...			...	
Rawalpindi	...	...				...				...				...				...			...	
Hazara	...	311	3	15		22	3	15		2	2	0		...				25	1	15	Chir, gond, dhrek, tut, charbi, akhrot, phulai, alucha, sarin, tali, chinar, golab, aru, alubukhara, &c.	2½ acres Civil Rakb, Abbott-abad, sown with large quantities of seed.
Umballa	...	...				...				...				...				...			...	
Kangra	...	...				...				...				...				...			Tun, shisham, mangoe, khirik, jaman, mulberry, siris, &c.	
Simla	...	...				...				...				...				...				
TOTAL	...	1,633	3	18		101	1	39		10	0	39		1	3	9		109	3	29		

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TABLE No. V.

Statement showing Income realized in the Districts of the Punjab during the year 1884-85.

Districts.	I. Ornamental Gardens.							II. Nurseries.							III. Avenues and Groves.							IV. Afforested Wastes.							Grand Total.	Remarks.
	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.		
I.—Arid.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Shahpur	...	...	...	1,114	...	531	...	...	...	...	...	...	...	...	887	...	...	...	...	...	...	...	...	...	..	...	...	...	2,532	
Mooltan	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	97	...	...	...	...	...	...	...	...	...	...	...	97	
Jhang	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Information wanting.
Montgomery	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Muzaffargarh	...	...	...	...	...	...	...	...	...	...	...	...	...	...	359	198	77	241	...	...	257	...	...	...	...	...	...	...	1,132	
Dera Ismail Khan ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	15	...	...	...	...	46	...	...	...	...	...	...	...	...	61	
Dera Ghazi Khan ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	51	...	19	75	...	...	...	...	...	...	...	...	...	...	145	
Bannu	...	...	...	...	...	..	...	...	...	...	...	...	...	...	462	...	...	...	...	...	...	...	...	...	...	...	...	...	462	
II.—Very Dry.																														
Hissar	...	...	2	259	....	...	71	...	...	...	16	...	...	...	...	...	46	...	...	...	...	...	...	...	...	...	...	...	394	
Kohat	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Peshawar	...	...	...	...	...	...	...	...	...	...	...	...	...	...	17	5	258	...	...	...	...	...	...	...	...	...	...	...	280	
Ferozepore	...	...	...	...	...	..	...	...	...	...	...	...	...	...	509	5	1,500	127	6	557	28	...	...	...	...	...	...	...	2,732	
Karnal	...	...	...	87	...	...	...	...	...	...	...	...	...	...	...	...	40	...	...	...	...	...	...	...	...	...	...	...	127	
Rohtak	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	91	...	...	...	...	...	...	...	...	...	...	...	91	
III.—Dry.																														
Lahore	...	...	...	...	...	...	...	...	...	...	...	...	...	...	16	85	682	...	...	...	...	...	...	...	...	...	...	...	783	
Ludhiana	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Information wanting.
Jullundur	...	...	14	545	110	14	...	...	...	3	118	128	34	6	32	...	4,300	5	...	778	...	...	...	...	...	...	...	...	6,087	
Amritsar	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Do. do.
Gujranwala	...	...	...	442	...	...	...	...	...	...	...	...	...	...	...	...	498	...	...	...	...	...	...	...	...	...	...	...	940	
Dehli	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	229	...	...	...	...	...	...	...	...	...	...	...	229	
Gurgaon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	818	...	...	440	...	...	...	...	...	...	...	...	1,258	
Jhelum	...	...	...	344	...	...	...	...	...	...	...	...	...	...	688	...	...	...	...	...	...	...	...	...	...	...	...	...	1,032	
IV.—Forest Districts.																														
Sialkot	...	...	...	1,131	664	300	...	492	...	3,775	...	...	657	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7,019	
Gurdaspur	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1,684	...	...	...	...	...	..	...	...	...	...	...	1,684	
Gujrat	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	
Hoshiarpur	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Information wanting.
Rawalpindi	...	...	...	...	...	...	...	...	...	...	...	...	...	...	141	...	...	...	...	...	...	...	...	...	...	...	...	...	141	
Hazara	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Do. do.
Umballa	...	...	...	167	...	...	45	...	...	...	...	...	...	...	...	...	1,377	...	...	...	...	...	...	...	...	...	...	...	1,589	
Kangra	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Do. do.
Simla	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Total ...			16	4,089	774	845	116	492		3,778	134	128	691	6	3,177	293	11,716	448	6	1,821	285								28,815	

TABLE No. VI.

Statement showing Expenditure incurred on Arboricultural operations in the Districts of the Punjab during the year 1884-85.

Districts.	I.—Ornamental Gardens.		II.—Nurseries.		III.—Maintenance & Repairs of Established Avenues & Groves.		IV.—Extension of Avenues & Groves		V.—Afforestation of Waste land.		Grand Total.	Surplus.	Deficit.	Remarks.
	A. Working.	B. Establishment.	A. Working.	B. Establishment.	A. Working.	B. Establishment.	A. Working.	B. Establishment.	A. Working.	B. Establishment.				
I.—Arid.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Shahpur	1,096	1,837		...	...	1,297	...	...	...	...	4,230	...	1,698	
Mooltan	...	...	...	...	1,924	1,176	...	...	...	...	3,100	...	3,003	
Jhang	...	...	...	...	...	...	...	...	...	...	...	...	...	Information wanting.
Montgomery	...	...	...	...	...	...	...	...	...	...	1,695	...	1,695	
Muzaffargarh	...	...	...	...	2,531	2,595	...	...	...	...	5,126	...	3,994	
Dera Ismail Khan ...	...	...	...	...	...	1,740	154	...	...	...	1,894	...	1,833	
Dera Ghazi Khan ...	257	948	384	...	...	3,738	400	1,055	...	...	6,782	...	6,637	
Bannu	100	252	74	72	165	1,535	...	...	...	...	2,198	...	1,736	
II.—Very Dry.														
Hissar	598	681	514	1,096	170	1,605	...	...	30	...	4,694	...	4,300	
Kohat	...	...	...	...	...	...	...	352	...	...	352	...	352	
Peshawar	...	...	...	...	...	1,932	...	...	...	...	1,932	...	1,652	
Ferozepore	...	...	...	...	6,754	1,398	...	...	...	...	8,152	...	5,420	
Karnal	...	...	287	499	1,419	2,652	...	...	...	...	4,857	...	4,730	
Rohtak	...	...	...	432	...	4,853	515	250	...	...	6,050	...	5,959	
III.—Dry.														
Lahore	...	...	...	...	1,578	1,922	...	...	...	...	3,500	...	2,717	
Ludhiana	...	...	...	...	...	...	...	...	...	...	...	...	...	Do. do.
Jullunder	1,125	703	521	1,303	101	1,425	...	614	...	...	5,792	295	...	
Amritsar	...	...	...	...	...	...	...	...	...	...	...	...	...	Do. do.
Gujranwala	...	1,225	...	...	48	2,665	256	...	...	...	4,194	...	3,254	
Delhi	...	...	...	...	2,682	4,238	...	...	...	...	6,920	...	6,691	
Gurgaon	...	...	...	...	357	4,530	...	...	...	...	4,887	...	3,629	
Jhelum	3,240	...	1,007	...	1,809	...	...	...	...	...	6,056	...	5,024	
IV.—Forest Districts.														
Sialkot	1,356	1,442	69	204	200	2,171	...	...	70	228	5,740	1,279	...	
Gurdaspur	...	...	...	...	...	...	...	...	...	...	5,072	...	3,388	
Gujrat	...	...	...	...	133	1,521	...	...	...	...	1,654	...	1,654	
Hoshiarpur	...	...	...	...	...	...	...	...	...	...	...	...	...	Do. do.
Rawalpindi	...	...	...	...	589	...	...	...	...	...	589	...	448	
Hazara	...	...	...	...	...	...	...	...	...	...	...	...	...	Do. do.
Umballa	...	...	...	...	139	1,904	...	...	...	...	2,043	...	454	
Kangra	...	...	...	...	...	...	...	...	...	...	...	...	...	Do. do.
Simla	...	...	...	...	...	...	...	...	...	...	...	...	...	
Total ...	7,772	7,088	2,856	3,606	20,599	44,897	1,325	2,271	100	228	97,509	1,574	70,268	

Deficit ... 68,694

TABLE No. VII.

Progress Statement of Avenues planted in Canal Divisions during the year 1884-85.

Divisions.	I Road or Canal on which avenues have been planted or are in course of construction. *Total length in feet.*	II Length of single lines stocked with trees or established plants at the beginning of the year. *Feet.*	III Length of single lines planted during the year. *Feet.*	IV Length of single lines on which cultivation has failed or on which trees or established plants have been destroyed or felled. *Feet.*	V Length of single lines stocked with trees or established plants at the end of the year. *Feet.*	VI Species of trees cultivated.	VII Remarks.
Bari Doab Canal, 2nd Division*							* Statement of avenues not received.
Ditto 1st Do.*							
Swat River Canal	5,65,804	15,466	...	...	15,466	Shisham, mulberry and bakain.	
Upper Sutlej, Inundation Canal ...	15,89,280	15,89,280	...	...	15,89,280	Mostly kikar ...	No avenues in the Division. Trees are of spontaneous growth.
Chenab Canal Division ...	...	...	...	...	...	...	
Lower Sutlej and Chenab Division Inundation Canals.	...	...	...	...	...	1,73,906 trees in all in this Division consisting of sissu, kikar and mangoe.	No planted avenues, only self-sown trees growing irregularly. 1,72,044 trees in all in the Division.
Indus Canal, Dera Ghazi Khan Division	24,32,250	7,44,300	54,100	...	7,98,400	Sissu, kikar, siris, tun	
Muzaffargarh Canal Division ...	1,84,000	80,050	15,700	22,800	72,950	Shisham, pomegranate, mangoe, tamarisk, pipal, plum, mulberry, kikar, sarin, lasura, & bar.	In previous returns the Kot Ratta embankment trees were erroneously shown as partly on the embankment and partly on the Canal. 1,42,665 trees in all in this Division. Work during the year was confined to maintaining existing plantations.
Sirhind Canal, Main Line Division ...	3,166 acres	1,935 acres	155 acres	...	2,090 acres	Kikar, shisham, and mangoe.	No avenues or plantations formed on Canal banks, but 2 nurseries started.
Do. 3rd do. ...	3,110 ,,	660 ,,	571 ,,	...	1,231 ,,		
Do. 4th do. ...	2,490 ,,	197 ,,	265 ,,	30 acres	235 ,,		
Do. 5th do. ...	3,868 ,,	1,075 ,,	...	...	1,075 ,,		
Western Jumna Canal, Karnal Division	10,93,900	11,82,000	...	...	11,82,000	Simbal, pipal, bakain, tut, tun, shisham, mangoe, khatta, bahera, bar, mahogany, eucalyptus, and jaman.	1,65,207 trees of kinds at close of 1884-85.
Do. Hansi do. ...	11,72,582	21,39,590	20,000	2,500	21,57,090	Kikar, shisham, tun, mangoe, farash, and mulberry.	14,882 ,, ,, ,, ,, ,,
Do. Delhi do. ...	61,81,760	42,08,720	75,170	19,400	42,64,490	Shisham, tun, jaman, nim, siris, kikar, gular, mulberry, pipal, mangoe.	1,47,580 ,, ,, ,, ,, ,,
Do. New Delhi Branch do. ...	3,72,580	55,000	...	...	55,000	Sissu, kikar, tun, jaman.	
Total ...	1,35,92,156	1,00,14,406	1,64,970	44,700	1,01,34,676		

TABLE No. VIII.

Canal Income.

Division.	I.—Ornamental Gardens.							II.—Nurseries.							III.—Avenues and Groves.							IV.—Afforested Wastes.							Grand Total.
	Wood.							*Wood.*							*Wood.*							*Wood.*							
	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bari Doab Canal, 1st Division ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	49	14,171	278	...	3,424	863	...	...	...	...	...	...	...	18,785
Ditto 2nd do. ...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	3,466	5,234	57	...	8,616	...	...	...	...	...	...	...	...	17,373
Swat River Canal Division	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Upper Sutlej Inundation Canal ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chenab Canal Division	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lower Sutlej and Chenab Division Inundation Canal	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1,072	1,744	2,404	61	...	109	...	...	...	...	...	...	...	...	5,390
Indus Canal, Dera Ghazi Khan Division	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1,490	...	...	...	...	...	...	...	...	...	...	...	1,490
Muzaffargarh Division, Inundation Canals	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	785	1,740	...	894	...	39	...	...	...	...	...	...	...	3,458
Sirhind Canal, Main Line Division ..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	54	...	5,387	...	...	2,176	...	...	...	...	...	...	...	...	7,617
Ditto 3rd ditto ...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	854	...	...	880	...	...	...	...	...	...	...	...	1,734
Ditto 4th ditto ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...
Ditto 5th ditto ...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	46	296	213	67	...	1,739	...	...	...	...	...	...	...	...	2,361
Western Jumna Canal, Karnal Division	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Not given.
Ditto Hansi do.	...	...	...	...	...	...	...	...	...	6,998	217	15	292	38	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7,560
Ditto Delhi do.	...	...	...	...	...	...	...	...	...	8,221	655	...	287	47	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9,210
Ditto New Delhi Branch...	...	...	...	...	...	...	...	...	..		...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...
Total ...	...	...	...	...	...	...	...	...	...	15,219	872	15	579	85	1,172	6,340	31,493	463	894	16,944	902	...	...	...	...	...	...	...	74,978

TABLE No. IX.

Canal Expenditure.

Division.	I.—Ornamental Gardens.		II.—Nurseries.		III—Maintenance & Repairs of Established Avenues & Groves.		IV.—Extension of Avenues & Groves.		V.—Afforestation of Waste Land.		Grand Total.	Surplus.	Deficit.
	A. Working.	B. Establishment.	A. Working.	B. Establishment.	A. Working.	B. Establishment.	A. Working.	B. Establishment.	A. Working.	B. Establishment.			
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs	Rs. A. P.	Rs. A. P.	Rs. A P.
Bari Doab, 1st Division ...	...	...	367	...	8,820	...	...	...	...	...	9,187 0 0	9,598 0 0	...
Do. 2nd Do. ...	...	...	718	...	2,002	719	...	...	...	...	3,439 0 0	13,934 0 0	...
Swat River, Canal Do. ...	...	...	...	...	...	...	...	...	...	...	...	...	...
Upper Sutlej Inundation Canal ...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chenab, Canal Division ...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lower Sutlej and Chenab Division Inundation Canal	...	...	1,348	...	...	...	...	...	...	...	1,348 0 0	4,042 0 0	...
Indus Canal, Dera Ghazi Khan Division...	...	...	459	...	231	...	2,657	...	...	...	3,347 0 0	...	1,857 0 0
Muzaffargarh Division, Inundation Canals,	...	...	...	...	355	...	...	...	...	...	355 0 0	3,103 0 0	...
Sirhind Canal, Main line Division ...	...	...	263	...	3,571	...	...	...	...	...	3,834 0 0	3,783 0 0	...
Do. 3rd „ ...	...	...	3,814	...	2,141	220	...	...	...	...	6,175 0 0	...	4,441 0 0
Do. 4th „ ...	...	...	936	...	3,906	213	...	...	...	...	5,055 0 0	...	5,055 0 0
Do. 5th „ ...	...	...	2,802	...	4,253	1,966	...	...	...	...	9,021 0 0	...	6,660 0 0
Western Jumna Canal, Karnal Division...	...	...	...	...	...	...	...	...	...	...	...	...	...
Do. Hansi „ ...	...	...	2,602	...	...	...	...	...	...	...	2,602 0 0	4,958 0 0	...
Do. Delhi „ ...	...	...	1,540	...	...	...	...	...	...	...	1,540 0 0	7,670 0 0	...
Do. New Delhi Branch ..	...	...	...	...	...	...	...	—	...	...	...	...	...
Total ...	...	...	14,849	...	25,279	3,118	2,657	...	...	..	45,903 0 0	47,088 0 0	18,013 0 0

Net Surplus ... Rs. 29,075.

TABLE No. X.

Progress Statement of Avenues planted on Provincial Roads during the year 1884-85.

Divisions.	I	II	III	IV	V	VI	VII
	Road or Canal on which avenues have been planted or are in course of construction.	Length of single lines stocked with trees or established plants at the beginning of the year.	Length of single lines planted during the year.	Length of single lines in which cultivation has failed or on which trees or established plants have been destroyed or felled.	Length of single lines stocked with trees or established plants at the end of the year.	Species of trees cultivated.	Remarks.
	Feet.	*Feet.*	*Feet.*	*Feet.*	*Feet.*		
Peshawar Division	20,52,280	4,23,345	44,723	14,754	4,53,314	Shisham, mulberry, kikar. bakain, tamarix, siris, willow, ber, acacia.	Nothing was done during the year in the Hazara District. In the Peshawar District on the Lahore and Peshawar road, between Peshawar and Nowshera, most of the trees are of farash with a few of other species intermixed, but from Nowshera to Attock the shisham predominates. The trees on this road are planted in single lines on both sides, except at Khoond, where the lines are occasionally double. In the Kohat District, besides avenues, several groves have been planted at Khushalgarh.
Rawalpindi ,, ...	8,29,282	3,48,360	...	...	3,48,360	Kikar, shisham.	30 miles single and 24 miles double avenues on the Lahore-Peshawar road. 11 miles single and 1 mile double avenues on the Rawalpindi-Barakow road.
Lahore ,, ...	14,29,159	26,48,716	1,34,014	37,352	27,45,378	Shisham, siris, kikar, mulberry, farash, beri, jhand, tut, pipal, naseya, bohar, jaman, mangoe.	About 16 miles of road in this Division have double lines of avenues. The length of stocked lines is continuous in long sections except on portions of the Pindi-Bhatian road and Shadera-Wazirabad road. The figures in columns I and II have now been carefully verified.
Amritsar ,, ...	9,62,363	13,33,452	7,800	9,540	13,31,712	Shisham, kikar, siris, mangoe, jaman, phowan, phulai, bakain, kachnar, lasura, tun, mulberry.	
Umballa ,, ...	...	...	...	...	...	Kikar, siris, shisham.	Only nurseries established during the year.
Delhi ,, ...	12,42,880	13,98,820	60,440	4,250	14,55,010	Shisham, jaman, nim, siris, kikar, mangoes, pipal, mulberry.	All avenue trees now planted have a bamboo *ring* fence round them 7 feet high, held together with iron hoops. The fence costs one rupee, and is likely to last 4 years. In addition broad-cast sowings are being tried.

TABLE No. X.—*concluded.*

Progress Statement of Avenues planted on Provincial Roads during the year 1884-85.—concluded.

Divisions.	I	II	III	IV	V	VI	VII
	Road or Canal on which avenues have been planted or are in course of construction.	Length of single lines stocked with trees or established plants at the beginning of the year.	Length of single lines planted during the year.	Length of single lines in which cultivation has failed or on which trees or established plants have been destroyed or felled.	Length of single lines stocked with trees or established plants at the end of the year.	Species of trees cultivated.	Remarks.
	Feet.	*Feet.*	*Feet.*	*Feet.*	*Feet.*		
Simla Division	...	...	...	...	...	...	Nothing done during the year.
Derajat „	23,79,931	6,78,872	90,268	19,555	7,49,585	Siris, kikar, farash, shisham, bakain, bhani, mangoe, mulberry, willow.	Avenues in this Division are doing well.
Jullundur „	10,40,989	10,08,971	1,87,558	23,920	11,72,609	Shisham, sambhal, mulberry, nim, pipal, amaltas, siris, mangoe, tun, ooi, urjan, tut, kanyar, dhoora, and dhrek.	Single lines of avenues on most of the roads.
Amritsar-Pathankote Railway ...	3,49,800	...	6,79,988	1,22,165	5,57,773		
Total ...	1,02,86,684	78,40,536	12,04,741	2,31,536	88,13,741		

PROGRESS REPORT

ON

ARBORICULTURE IN THE PUNJAB

For the year 1885-86.

LIBRARY OF THE BOMBAY BRANCH OF THE ROYAL ASIATIC SOCIETY.

W. Ball & Co., Govt. Printers.—24-9-86.—250.

No. 460.

FROM

T. GORDON WALKER, ESQUIRE,

Offg. Junior Secretary to Government,

Punjab and its Dependencies,

To

H. C. HILL, ESQUIRE,

Offg. Conservator of Forests,

Punjab.

Dated Lahore, 11th November 1886.

Forests.

SIR,

I AM directed to acknowledge the receipt of your letter No. 1362, dated 20th September 1886, submitting five tabular statements showing the progress of arboriculture in the Punjab during the year 1885-86, with brief notes recorded in the column of remarks. In reply I am to convey the following observations of the Lieutenant-Governor.

2. The report, which was due on September 1st, was not despatched till September 20th, and was received in this office on October 9th. It is explained that the statements from certain districts, which should have been submitted by July 1st, were not received till after August 15th, thus causing delay in the submission of the returns for the Province. The report required for this year is of the briefest possible description, and I am to call your attention to paragraph 7 of the review of last year, and to request that in future all instances of the unpunctual submission of these statements may be brought to the notice of Government.

3. The rainfall of the year appears to have been considerably above the average. The only districts among those classed as *arid* in which there has been a diminished rainfall are Montgomery and Ferozepore; in all the *very dry* districts it has been above the average; and in only seven of the remaining districts of the Province has the rainfall been somewhat less than usual. It is partly in consequence of these favorable conditions that the length of single lines of avenues planted during the year shows a considerable increase over the figures returned for the previous year, the total this year being 50,72,717 feet against 18,40,373 feet for 1884-85. But it also appears from the remarks recorded against the figures of certain districts that this large increase in the returns of lengths planted is due chiefly to more careful measurements, and to the inclusion of lengths of avenues previously planted, but excluded from former returns. If allowance be made for this, according to the entries in the column of remarks in Statement No. I (*a*), the total length of single lines of avenues actually planted during the year amounts to 25,33,746 feet. The loss of 9,14,033 feet of trees in the Kángra District, commented upon in last year's review, is now explained as being erroneous, and it is stated that no such loss occurred. The figures of length of lines on which trees have been lost this year are high in Lahore and Delhi, being 4,04,710

feet and 3,13,330 feet respectively. These figures obviously called for explanation in the column of remarks. Commendable activity in the planting of avenues appears from the returns to have been exhibited in several districts, and the Lieutenant-Governor is pleased to observe the increased interest shown by District Officers generally in the subject of arboriculture. Statements I and II submitted from Amritsar are blank, and the returns are otherwise imperfect. The attention of the Deputy Commissioner of that district will be drawn to the matter, and he will be asked to see that complete returns are submitted for the future.

4. Remarks similar to those made in the last paragraph regarding the inaccuracy of previous returns apply to the operations shown under the heads of Groves and Nurseries in Statements II and III, the increases of area being in great part nominal, and merely the result of omission from the returns of the preceding year. It is hoped that some degree of accuracy has now been attained, and that the future returns will show the actual progress of each year.

5. The Lieutenant-Governor is glad to observe that the subject of fodder trees appears to have received considerable attention, and that, although primary attention is directed to obtaining trees for shelter purposes on district roads, fodder trees are extensively planted in almost all districts where the necessity is likely to make itself felt. The entries in column VI of Statements I—III show that a number of trees which could be utilized for fodder are planted generally throughout the Province. Experiments have been tried this year with the salt bush in several districts, but the result has not yet been reported to Government; the only mention of it in the present statements is from Dera Gházi Khan, where it is said the seed did not germinate. As stated in the concluding paragraph of your remarks, a fuller report on the subject of fodder trees should be given in the next narrative report.

6. The following table shows the expenditure, income, and net cost of arboriculture in the districts of the Province during the past five years :—

	Expenditure.	*Income.*	*Net Cost.*
	Rs.	Rs.	Rs.
1881-82	1,07,886	35,478	72,408
1882-83	99,581	32,864	66,717
1883-84	1,39,804	50,944	88,860
1884-85	1,24,262	51,948	72,314
1885-86	1,56,317	66,256	90,061

The figures for last year are approximate, as the returns for five districts were not included owing to late submission, those for 1883-84 being substituted. It will be seen that, while the expenditure and income have both largely increased, the net cost of arboriculture in the year under review, though it considerably exceeds the figures of last year which were only approximate, is greater than the net cost for 1883-84 by only Rs. 1,201; and, if the increased extent of arboricultural operations this year be taken into consideration, the financial results do not compare unfavorably with those attained in previous years.

I have, &c.,

T. GORDON WALKER,

Offg. Junior Secretary to Government, Punjab.

Punjab Government Press, Lahore.—8-11-86—332.

No. 1362.

FROM

H. C. HILL, ESQUIRE,

Conservator of Forests, Punjab,

To

THE JUNIOR SECRETARY TO GOVERNMENT,

PUNJAB.

Dated 20th September 1886.

SIR,

I have the honor of submitting herewith five tabular statements (noted at foot) showing the progress of arboriculture in the Punjab during the year 1885-86.

2. The delay in submission of these statements is entirely due to my not receiving the statements for some districts till after the 15th August, instead of on the 1st July.

3. The heavy loss of plants noticed in the Kangra district in 1884-85 has been briefly remarked on in the statements as was requested.

4. Some notice in the remarks columns has been given to the question "whether fodder trees are propagated in the districts with a view to the supply of fodder in the time of famine." It would appear from the names of trees entered in columns 6 of statements I, II and III, that there are many fodder trees planted; and generally it is reported that though primary attention is directed to obtaining trees for shelter purposes on district roads, nevertheless fodder trees have been and are still planted in almost all districts where the necessity makes itself felt. In many instances those already planted furnished fodder during the last famine. This matter will be dealt with more fully in the next narrative report.

Statement	I a.—Avenues.	(Districts).
Do.	„ b.— „	(Canals).
Do.	„ c.— „	(Provincial roads).
Do.	II a.—Groves.	(Districts).
Do.	„ b.— „	(Canals).
Do.	„ c.— „	(Provincial roads).
Do.	III a.—Nurseries.	(Districts).
Do.	„ b.— „	(Canals).
Do.	„ c.— „	(Provincial roads).
Do.	IV a.—Income.	(Districts).
Do.	„ b.— „	(Canals).
Do.	„ c.— „	(Provincial roads).
Do.	V a.—Expenditure.	(Districts).
Do.	„ b.— „	(Canals).
Do.	„ c.— „	(Provincial roads).

I have the honor to be,

Sir,

Your most obedient servant,

H. C. HILL,

Offg. Conservator of Forests, Punjab.

STATEMENTS.

STATEMENT No. I (*a*).

Progress Statement of Avenues in the Districts of the Punjab during the year 1885-86.

I.		II.	III.	IV.	V.	VI.	VII.		VII.
Roads or Canal on which avenues have been planted or are in course of construction.		Length of single lines stocked with trees or established plants at the beginning of the year.	Length of single lines planted during the year.	Length of single lines on which cultivation has failed or on which trees or established plants have been destroyed or felled.	Length of single lines stocked with trees or established plants at the end of the year.	Species of trees cultivated.	Rainfall.		Remarks.
Name of	Total length in feet.	Feet.	Feet.	Feet.	Feet.		Average.	During the year.	
ARID.									
Muzaffargarh	15,77,919	7,03,635	53,518	9,255	7,47,898	Shisham, siris, pipal, farash, mango.	5·93	5·93	Double lines of trees are planted on either side of the road, the figures in columns II, III, IV and V represent the length of double line. The chief work attempted is the complete stocking of the main district roads. Maintenance only of existing lines on other roads.
Mooltan	17,71,130	1,98,967	2,20,923	5,137	4,14,753	Siris, shisham, pipal, bohar, lasura, ber, jaman, phulai, mulberry, kikar, farash.	7·05	9·7	171,606 feet of lines entered in column III were previously stocked, but were not shown in column II of previous statements by returning officer.
Dera Ghazi Khan	16,44,720	4,43,520	44,880	...	4,88,400	Shisham, kikar, siris, mangoes, eucalyptus, nim, tún.	7·15	8·6	*Siris* affords fodder for cattle in winter, being found as good, if not better, than "bhusa." Carob and mesquit bean also give fodder, but not affording shade are grown only in plantations and not in avenues.

Dera Ismail Khan	10,87,680	3,45,036	5,660	31,649*	3,19,047	Shisham, tamarisk, pipal, mulberry, ber, siris.	8·38	10·5	*29,340 ft. of lines on the road, Dera to Chunda, now made over to the P. W. Department, these are not failures.
Montgomery	4,80,500	84,480	1,000	2,430	83,050	Kikar, ber, jhand, shisham and siris.	10·54	8·2	Some of the established plants have been destroyed during the year owing to scarcity of rain and river water. The average rainfall has been calculated for the last 5 years.
Jhang	15,20,165	2,63,040	22,875†	25,770‡	2,60,145	Shisham, siris, ber, kikar, pipal, tut, bangan, tamarisk, date tree, amaltas, phulai, jhand, jaman, barna, mangoes and sohanjna.	8·3	10·93	† Includes 165 ft. erroneously shown as a nursery last year. ‡ Includes 15,580 ft. now deducted because erroneously shown in the closing balance of 1884-85. New planting operations begun on two roads, one from Shorekot to Kamalia, the other from Tahsil to the school at Chiniot.
Bannu	8,56,797	4,36,222	3,27,525	84,118	6,79,629	Shisham, willow, mulberry, ber, kikar and khagal.	12·79	17·3	Includes 245,124 ft. fully stocked lines omitted in previous returns.
Shahpur	19,39,402	14,78,235	32,858	6,338	15,04,755	Shisham, kikar, mulberry, bakain.	14·86	15·4	Trees are at present planted more for their timber and shade than for fodder purposes, but the leaves of shisham, kikar, mulberry and ber are used for fodder when grass is scarce.
Hissar	11,88,330	2,94,537	1,56,200§	...	4,50,737	Kikar, shisham, pipal, bakain, shahtut, tún, nim.	15·52	25·9	§ No plantations of the year, omitted by returning officer in returns for 1884-85. No lengths of lines are given as stocked, but it is reported that 3,742 trees were planted, of which 2,066 lived.
Ferozepur	38,63,640	23,29,800	13,279	...	23,43,079	Farash, kikar, beri, tut, tali, &c.	22·31	15·0	
VERY DRY.									
Peshawar	4,13,055	2,23,655	43,840	1,17,855¶	1,49,640	Shisham, ghaz, phola, mulberry, ber.	13·24	23·2	¶Includes 108,275 feet, difference between balance shown in printed report for 1884-85 and district returns for 1885 not accounted for, presumably failures; and here entered as such.
Kohat...	12,000	6,570	4,455	1,458	9,567	Ber, shisham, siris, tut willow, eucalyptus.	19·37	24·7	Fodder trees not specially planted; there being extensive grazing grounds in the district.
Carried over ...	1,63,55,338	68,07,697	9,27,013	2,84,010	74,50,700				

Progress Statement of Avenues in the Districts of the Punjab during the year 1885-86—continued.

I. Roads or Canal on which avenues have been planted or are in course of construction. Name of	Total length in feet.	II. Length of single lines stocked with trees or established plants at the beginning of the year.	III. Length of single lines planted during the year.	IV. Length of single lines on which cultivation has failed or on which trees or established plants have been destroyed or felled.	V. Length of single lines stocked with trees or established plants at the end of the year.	VI. Species of trees cultivated.	VII. Rainfall. Average.	VII. Rainfall. During the year.	VIII. Remarks.
	Feet.	Feet.	Feet.	Feet.	Feet.				
Brought forward ...	163,55,338	68,07,697	9,27,013	2,84,010	74,50,700				
Rohtak	23,62,200	6,02,405	2,36,660*	5,570	8,33,495	Shisham, farash, nim, kikar, siris, pipal, tut.	19·88	40·0	* Includes 136,400 entered in column II in the district returns, probably due to more correct measurements.
Lahore	16,03,845	4,45,280	5,23,022†	4,04,710	5,63,592	Shisham, tut, mangoe, farash, jaman, dharek, tún, kikar, ber.	21·64	22·2	† This includes 40,845 feet entered in column II of district returns, unaccounted for : probably arrived at by most recent and correct measurements.
Karnal	12,75,980	3,05,368	...	60	3,05,308	Shisham, siris, pipal, mulberry, banyan.	29·73	34·6	Existing plantations maintained merely. No new works undertaken. 60 feet were not failures, but entered wrongly last year.
DRY.									
Jhelum	10,80,580	7,70,040	1,71,605	28,025	9,13,620	Shisham, dhak, mulberry.	24·60	29·3	Includes 65,330 feet entered by returning officer in column II. Again probably due to more careful measurements. Deputy Commissioner remarks these.

Gujranwala	19,03,440	5,72,880	5,280	...	5,78,160	Shisham, kikar, mulberry.	19·6	25·47	The District Officer's statement shows this 5,288 feet as stocked with 30 trees only on the road from Shekarpura to Kadrabad. No length of line is shown on other roads as planted during the year, but 4,667 trees were put on various roads to fill gaps.
Gurgaon	18,17,980	11,03,200	2,47,440‡	43,740	13,06,900	Shisham, nim, siris, jaman, pipal, kikar, mangoes, millingtonia, farash.	26·15	39·4	‡ Includes 149,460 ft. line established since some time, but omitted from former statements; now included as stocked, the returning officer enters this in column II. Plants of the year are on the whole doing fairly well; much of current year's work has been consolidation rather than extension.
Amritsar	...	...	...	...	...	...	26·31	23·0	
Delhi	11,86,620	6,71,828	5,18,108§	3,13,330	8,76,606	Nim, shisham, siris, jaman, kikar, lasura, gular, tún, mulberry, ber, pipal, bakain, khatta.	37·8	37·4	Only 316,080 feet of this, new operation; the blance being due to corrections.
Ludhiana	5,77,445	5,30,560	20,201	5,436‖	5,45,325	Shisham, jaman, siris, mulberry, ber.	31·39	30·6	‖ Includes 1,536 ft. probably failures; omitted from column II by returning officer without explanation here shown as failures. New operations were carried out on three roads only; the plantings were apparently successful. Failures on one road only are reported. In addition 4,489 trees were planted out to fill up gaps.
Rawalpindi	48,96,718	20,30,004	2,08,024	1,46,978	20,91,050	Shisham, mulberry, kikar, phulai, ber, dharek, phagwara, tún.	31·96	35·8	Includes 5,890 feet of stocked lines omitted in previous returns. In many places these roads for great lengths run through rocky and rugged country where it is impossible to plant trees. The rains were late; many trees died.
Hoshiarpur	23,23,460	18,83,055	2,575	20,000¶	18,65,630	Siris, mango, pilkin, bahera, jaman, eucalyptus, pipal, bohar, patajan, argun, gamber khirni, maulsiri, hirak, dhes, khair, rajain, kambal, gular.	35·04	25·8	¶ This 20,000 feet is not failures; but owing to a misprint column 5 in statement of 1884-85 was augmented by this amount. It is now deducted. No remarks are made by the returning officer for this district.
Carried over ...	3,53,83,606	1,57,22,317	28,59,928	12,51,859	1,73,30,386				

Progress Statement of Avenues in the Districts of the Punjab during the year 1885-86—concluded.

I.		II.	III.	IV.	V.	VI.	VII.		VIII.
Roads or Canal on which avenues have been planted or are in course of construction.		Length of single lines stocked with trees or established plants at the beginning of the year.	Length of single lines planted during the year.	Length of single lines on which cultivation has failed or on which trees or established plants have been destroyed or felled.	Length of single lines stocked with trees or established plants at the end of the year.	Species of trees cultivated.	Rainfall.		Remarks.
Name of	Total length in feet.	Feet.	Feet.	Feet.	Feet.		Average.	During the year.	
Brought forward ...	353,83,606	157,22,317	28,59,928	12,51,859	173,30,386				
Forest Districts.									
Jullundur	13,09,620	14,73,940	5,53,780*	47,520	19,80,200	Shisham	28·25	26·1	* Includes 385,940 feet fully stocked, but formerly omitted to be returned; now entered. Length of single lines are shown not double lines as returned by district officer. Plants put out are generally flourishing.
Gujrat	5,27,000	3,70,000	11,000	...	3,81,000	Do.	29·92	23·5	In the higher parts of the district much fodder was obtained from "kikar" avenues.
Gurdaspur	20,61,880	6,24,597	9,47,958†	1,026	15,71,529	Shisham, mango, sukhchain, bait, jaman, mulberry, dharek.	31·81	40·8	† Of this only 75,085 feet were added during the year, the balance is fully established, but omitted in former returns now entered. Great attention is given to maintenance.
Umballa	18,18,657	11,31,444	75,438	65,849‡	11,41,033	Shisham, nim, tut, siris, kikar, dharek, kachnar, mangoes, jaman, pipal, lasura.	35·42	34·0	‡ Of these 5,760 are deducted on account of miscalculations in previous returns.

Sialkot	38,46,480	25,60,350	2,16,490	1,62,860	26,13,980	Sisham, mulberry, siris, ber, kikar, mango, bahera, pipal, polah.	36·64	25·6	The year is reported as having been unfavorable for arboriculture. Storms uprooted heavy trees. Filling blanks was the chief work. Every attention is given to the cultivation of such trees as afford fodder in times of scarcity.
Simla	...	1,500	...	...	1,500	...	...	...	
Hazara	2,69,799	3,22,123	38,636	2,650	3,58,109	Hari, alucha, aru, bakian pine, mulberry, shisham, lokat and mango.	43·8	43·2	
Kangra	30,02,892	33,58,178	3,69,487	6,20,097‡	31,07,568	Mango, mulberry, dharek, jaman, bamboos, tún, karal, dodan, simbal, beri, kikar, pipal, alder, peach, apricot, poplar, plum, pear, fig, walnut. kail.	67·65	95.4	‡ Trees failed on only 139,657 feet of this lately, the balance is deducted on account of former faulty measurements. The Deputy Commissioner reports— "The figures for 1884-85 showing a heavy loss of 914,033 ft. trees were wrong. No such heavy loss occurred. Further explanation cannot be given. Corrections have now been made and statements compiled more carefully."
TOTAL ...	4,82,19,934	2,55,64,449	50,72,717	21,51,361	2,84,85,305				

STATEMENT No. I (*b*).

Progress Statement of Avenues in the Public Works Department, Canal Divisions of the Punjab, during the year 1885-86.

I.		II.	III.	IV.	V.	VI.	VII.		VIII.
Roads or Canal on which avenues have been planted or are in course of construction.		Length of single lines stocked with trees or established plants at the beginning of the year.	Length of single lines planted during the year.	Length of single lines on which cultivation has failed or on which trees or established plants have been destroyed or felled.	Length of single lines stocked with trees or established plants at the end of the year.	Species of trees cultivated.	Rainfall.		Remarks.
Name of	*Total length in feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*		*Average.*	*During the year.*	
Upper Sutlej Division, Inundation Canal ...	17,80,257	15,89,280	9,43,480*	...	25,32,760	Kikar, farash and shisham.	8·4	5·5	Spontaneous growth. No planted avenues. Trees for the most part line the banks. * Addition due to more accurate calculation.
Western Jumna Canal, Karnal Division	10,93,900	11,82,000	...	...	11,82,000	Shisham, kikar and tún.	37·1	42·8	
Ditto Hansi do.	11,72,582	21,57,090	40,000	...	21,97,090	Bamboos, siris, gular, jaman, shisham, kikar, tún, mango, &c.	16·4	32·5	
Ditto Delhi do.	61,90,100	42,64,490	8,340	88,880†	41,83,950	Shisham, tún, jaman, nim, kikar, mulberry, mango, &c.	...	...	† 35,000 feet of this length is deducted on account of former miscalculations.
Independent Sub-Division, Sirhind Canal ...	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	.....	...	...	No avenues planted. Future kikar trans. plants on to canal banks will be shown in this form.

Bari Doab Canal, 2nd Division	18,37,325	...	17,79,825*	13,200	17,66,625	Shisham, kikar, farash, jaman, tut and mulberry.	27·77	23·3	* Only 44,825 feet of line was operated on during the year, the balance is length already stocked, but not shown in former returns.
Ditto, 1st do.	7,69,221	...	13,22,000†	...	13,22,000	Shisham, kikar, tún, siris, mango, mulberry, &c.	24·0	19·5	† Fully stocked formerly, but omitted from last return.
Swat River Canal	5,99,729	15,466	10,134‡	...	25,600	Shisham, mulberry, bakain.	24	33·6	‡ Formerly stocked, but omitted in last return. Work was confined to refling gaps in existing lines.
Lower Sutlej and Chenab Inundation Canals ...	49,51,000	...	49,51,000	...	49,51,000	Kikar, shisham, farash, ber, jhand, date palm.	...	...	These figures represent running feet of lines of self-sown trees on both sides of the whole length of canals. Formerly stocked. No operations undertaken during the year.
Indus Canal, Dera Ghazi Khan Division ...	Not given.	7,98,400	1,05,430	28,020	8,75,810	Shisham to about 80 p. c., the remainder kikar, siris and tún.	5·6	6·5	Includes avenues on bands as well as on canal banks.
Muzaffargarh Canal Division	1,84,000	72,950	22,200	36,300*	58,850	Shisham, siris, kikar, pipal, benian, mango, jaman, ber, lasura.	6·43	7·13	500 feet of this excluded due to miscalculations in former returns. The decrease is in young plants only.
Sirhind Canal, 3rd Division	8,56,760§	1,73,718§	11,500	44,700	1,40,518	Shisham, kikar and mulberry.	...	...	§ Shown in previous returns in acres.
Ditto, 4th do.	71,50,000	64,000	1,07,000	30,000	1,41,000	Shisham and kikar ...	Not given.	Not given.	Ditto.
Ditto, 5th do.	7,09,044	23,800	60,600	16,300	68,100	Shisham, nim, anallis, mango, jaman, kikar.	Do.	29·9	Ditto.
Total ...	272,93,918	103,41,194	93,61,509	2,57,400	194,45,303				

STATEMENT No. I (*c*).

Progress Statement of Avenues planted on Provincial Roads of the Punjab during the year 1885-86.

I.		II.	III.	IV.	V.	VI.	VII.		VIII.
Roads or Canal on which avenues have been planted or are in course of construction.		Length of single lines stocked with trees or established plants at the beginning of the year.	Length of single lines planted during the year.	Length of single lines on which cultivation has failed or on which trees or established plants have been destroyed or felled.	Length of single line stocked with trees or established plants at the end of the year.	Species of trees cultivated.	Rainfall.		Remarks.
Name of	*Total length in feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*		*Average*	*During the year.*	
Bannu, North-Western Frontier Road Division ...	2,15,626	2,44,174	51,706	48,548	2,47,332	Shisham, ber, mulberry and willow.	12·0	17·3	Not shown last year.
Rawalpindi Division	9,29,282	3,48,360	...	...	3,48,360	Kikar and shisham.	Not	known	Gaps filled only; no new work done.
Lahore ditto	17,09,527	27,45,378	1,20,901	78,633	27,87,646	Kikar, shisham, siris, jhand, ber, farash, mulberry, &c.	15·0	13·1	
Amritsar ditto	9,87,970	13,31,712	1,48,697*	6,719	14,73,690	Shisham, mulberry, mango, siris, jaman, tún, kikar, phulai, &c.	36·4	30·6	* 132,427 feet of this presumably already fully stocked, but omitted from last return.
Umballa ditto	14,81,506	19,08,943	69,260	62,793	19,15,410	Shisham, jaman, siris, kikar, mango, nim, pipal, goolar, farash, tún, mulberry, tamarisk, dyak, lasura.	...	...	Omitted from last returns.
Delhi ditto	...	...	...	...	...	...	...	...	Now amalgamated.
Simla ditto	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*			
Derajat ditto	21,90,605	7,49,585	48,783	2,48,603†	5,49,765	Shisham, kikar, mango, siris, eucalyptus, tún, beri, pharas, bhani, phakkar, khagal.	7·5	8·5	On roadsides, the only tree planted that affords fodder for grass is the *siris* being found as good as *bhusa*. † Includes 244,174 feet due to wrong measurements; now excluded.

Jullundur ditto	10,97,689	11,72,609	3,91,708‡	8,725	15,55,592	Shisham, siris, kikar, mangoes, tún, mulberry, harhar, kanar, ozi, jaman, bakain, bor, chil; kohal.	...	...	‡ Includes 3,67,670 feet omitted from last returns owing to miscalculations, and now added.
Amritsar-Pathankote Railway	3,49,800	5,57,773	...	...	5,57,773	Shisham, mango, tún, chil, poplas, kikar.	Not	given.	
Peshawar Division	33,48,770	4,53,314	3,44,439§	52,822	7,44,931	Shisham, mulberry, safaida, farash, dharek, bakain, chir, simbal, sharinh, rawanh, willow, phulai, kala kath.	...	...	§ 2,62,657 feet of this already fully stocked, but omitted from last return. Some trees died on account of excessive heat and drought. These were damaged by villagers, their prosecution resulting in a Rs. 50 fine on each of four lambardars.
Kohat, North-Western Frontier Road Division ...	8,18,400	43,972	4,756	350	48,378	Shisham, mulberry, willow, ber, bakain, siris, pipal, bor, lasura, phulai, poplar, amla, chinas, fir, kikar.	2·16	26	Shown for the first time. The figures includes a small plantation at Kohat, which is 216 feet long by ·78 feet wide.
Total ...	1,31,29,175	95,55,820	11,80,250	5,07,193	1,02,28,877				

STATEMENT No. II (*a*).

Progress Statement of groves planted in the Districts of the Punjab during the year 1885-86.

District.	I. Area on which groves have been planted or are in course of construction.	II. Area stocked with trees or established plants at the beginning of the year.	III. Area planted during the year.	IV. Area on which cultivation has failed or on which trees have been destroyed or felled.	V. Area stocked with trees or established plants at the end of the year.	VI. Species of trees cultivated.	VII. Remarks.
Arid.	A. R. P.	A. R. P.	A. R. P.	A. R. P.	A. R. P.		
Muzaffargarh	201 0 11	151 2 17	49 1 34*	3 1 34	197 2 17	Shisham, fruit trees. ...	* This represents old groves fully stocked, but omitted from previous returns.
Mooltan	49 2 17	...	49 2 17†	...	49 2 17	Kikar, siris, ber, shisham, farash, jhand, phulai, tut, bohar and pipal.	† Previously stocked groves, but omitted from last returns.
Dera Ghazi Khan ...	226 2 0	146 2 0	80 0 0	...	226 2 0	Shisham, kikar, principally interspersed with fruit trees.	This represents the area of four groves and one plantation. The plantation consists of fodder plants as mulberry, carob, and masquit bean. The salt bush seeds did not germinate. The Guango (Pithecolobium saman) has also been tried and has succeeded in the public gardens, but is not suitable in large plantations where the water supply is precarious.
Dera Ismail Khan ...	11 0 0	11 0 0	...	6 0 0‡	5 0 0	Tamarisk, kikar, bers ...	‡ Transferred to Public Works Department, 1st April 1885.
Montgomery	30 2 0	22 1 20	5 2 20	...	28 0 0	Oranges, apples, arus and aluchas, kikar, ber, shisham, siris, mangoes, jamans, pomegranates, figs, amrat.	
Jhang	339 0 0	330 3 20	51 2 20	0 2 0	382 0 0	Mangoe, pipal, banyan, ber, shisham, willow, siris, grape, fig, symbul, eucalyptus, bedmushk, barna, tut, phulai, date tree, kikar, jhand, tamarisk, olive, tún, a large assortment of fruit trees.	
Bannu	1,084 0 0	...	1,084 0 0§	...	1,084 0 0	Shisham, reeds, kundar ...	§ Nothing sown or cultivated in the shisham forests, but the reeds when grown are cut down and grow again, giving a recurring crop. Previously stocked, but not shown last year.

Shahpur	278 0 0	206 1 3	33 2 37‖	9 0 0	231 0 0	Shisham, kikar, jhand, pipal, bakain, phulai, chil, kachnal, willow.	‖ Of this area 14 acres 2 roods and 37 poles are due to errors discovered in former returns.
Hissar	52 2 15	52 2 15	0 3 0	...	53 1 15	Orange, lime, shisham, kikar, pipal and siris,	During the year 4,297 trees were planted, of which 785 died.
Ferozpur	543 3 7	328 2 25	215 0 22¶	134 0 25*	409 2 22	Shisham, kikar, ber, mango, jaman, farash.	¶ 153 acres 2 roods and 12 poles of this area were omitted from all previous returns.
VERY DRY.							* This does not represent the area that has failed during the year, but is mostly due to correction of errors in former returns.
Peshawar	12 0 0	...	12 0 0†	...	12 0 0	Shisham, mulberry, dharek, phulai, ber and ghaz.	† Was already fully stocked, but not shown before.
Kohat	15 0 31	1 1 0	...	...	1 1 0	Shisham, tut, eucalyptus, bed and mulberry.	
Rohtak	716 0 32	711 1 5	14 1 7	227 1 26	498 0 26	Kikar, arus, farash, pipal, berbir and mulberry.	
Lahore	7 0 34	...	7 0 34‡	...	7 0 34	Farash, shisham, siris and tut.	‡ Seven acres of these were already stocked, but were omitted from last return.
Karnal	311 1 10	311 1 10	...	...	311 1 10	Shisham, siris, pipal, nim, mulberry and banyan.	
DRY.							
Jhelum	1 0 3	0 0 27	0 4 2	0 2 7	0 2 22	Shisham.	
Gujranwala			*Nil.*				
Gurgaon	1,412 0 0	...	24 0 0§	...	24 0 0	Shisham, nim, siris, jaman and pipal.	§ Already stocked, but not shown in last return.
Amritsar	...	...	...	...	...		
Delhi	78 3 27	...	78 3 27‖	30 0 0	48 3 27	Nim, kikar, pomegranate, jaman, pipal, tún, mulberry, mangoes, &c.	The seedlings in Sureda and Guman Hera were destroyed by floods; the young trees at Bhindasa were destroyed by cattle and goats through the negligence of the lambardars who were fined. All other groves doing well.
Ludhiana	...	...	149 0 0¶	...	149 0 0	Shisham, mulberry, jaman, mango, pipal, siris, and other fruit trees.	‖ Omitted from last return; not new operations. ¶ Already stocked, but omitted from last return.
Rawalpindi	198 0 0	...	174 0 0*	7 0 0	167 0 0	Shisham, phulai, kikar and dharek.	* 167 acres omitted from last return now shown.
Hoshiarpur	3 0 30	...	3 0 38†	...	3 0 38	Shisham, jaman, mango, tún, siris, dharek.	† Omitted in last return, now added. No work done during the year.
FOREST DISTRICTS.							
Jullundur	222 3 26	...	218 3 1†	12 0 39	206 2 2	.....	Already stocked, but omitted from last return, now shown as added. No work done during the year.
Gujrat			*Nil.*				
Gurdaspur	31 2 11	31 2 11	...	...	31 2 11	Shisham, mango, jaman and mulberry.	
Umballa			*Nil.*				
Sialkot	23 3 0	23 2 20	3 0 0	4 2 20	22 0 0	Siris, shisham, kikar, mulberry. ...	Three acres formerly nurseries, now transferred to groves.
Simla				*Nil.*			
Hazara	38 1 10	70 0 0	0 1 0	41 1 20	28 3 20	Mulberry, bakain, plantain, chinar, alucha, alu-bukhara, cedela, dias, pine.	The area shown in column 4 does not represent failures, but is now deducted to counterbalance the previous error of column II, entered as 70 acres last year. Ten large *Cedrus deodara* have been transplanted into the Haripur Tahsil compound, and are doing well.
Kangra			*Nil.*				
Total ...	5,887 2 24	2,399 0 13	2,255 2 19	476 1 11	4,178 1 21	.....	.....

STATEMENT II—(*b.*)

Progress Statement of groves planted in the Canal Divisions of the Punjab during the year 1885-86.

District.	I. Area on which groves have been planted or are in course of construction.	II. Area stocked with trees or established plants at the beginning of the year.	III. Area planted during the year.	IV. Area on which cultivation has failed or on which trees have been destroyed or felled.	V. Area stocked with trees or established plants at the end of the year.	VI. Species of trees cultivated.	VII. Remarks.
	Total area in Acres.	Acres.	Acres.	Acres.	Acres.		
Bari Doab Canal, 2nd Division ...	62	62	...	...	62	Shisham, kikar, tún, phulai, mango, and jaman.	
,, ,, ,, 1st ,, ...	226	226	6	6	226	Shisham and kikar	Failures are only partial due to the want of rain.
Sirhind ,, 3rd ,, ...	5,364	3,284	1,917	1,216	3,985	Do.	Operations consist of sowings on spoil banks, the ground is prepared in bad places. Failures due to long breaks in the rains.
,, ,, 4th ,, ...	473	307	166	115	358	Shisham, siris, mango, orange, kikar, pipal, nim.	
,, ,, 5th ,, ...	2,134	707	182	128	761	Shisham, siris, kikar, nim, tún, kachnal, jaman, mango.	
Upper Sutlej Division, Inundation Canal.	35	35	...	...	35	Shisham, mulberry, piple, bamboo, kikar and sirs.	Represent the area partly covered by trees in the various choki compounds.
Western Jumna Canal, Karnal Divn.	456	1,020	...	...	1,020	Tún, mango, shisham, kikar, siris, jaman, &c.	Many trees on the old canal have reached maturity and should be felled.
,, ,, ,, Hansi ,, ...	7	7	...	1	6	Mangoes	Failures due to heavy rain swamping the young plants.
,, ,, ,, Delhi ,, ...	...	77	...	...	77	Shisham, tún, nim, mango ...	There are no groves; these figures represent the area partly covered by trees in the choki compounds—99 trees were planted, 13 died.
Independent Sub-Divisions, Sirhind Canal.	952	850	68	187	731	Kikar.	
Swat River Canal	...	...	...	...	*Nil.*		
Sutlej and Chenab Inundation Canal Division.							
Indus Canal, Dera Ghazi Khan ...							
Muzaffargarh Canal Division ...							
Total ...	9,709	6,575	2,339	1,653	7,261		

STATEMENT II—(*c.*)

Progress Statement of groves planted in the Provincial Division, Public Works Department, of the Punjab, during the year 1885-86.

	I.	II.	III.	IV.	V.	VI.	VII.
DISTRICT.	Area on which groves have been planted or are in course of construction.	Area stocked with trees or established plants at the beginning of the year.	Area planted during the year.	Area on which cultivation has failed or on which trees have been destroyed or felled.	Area stocked with trees or established plants at the end of the year.	Species of trees cultivated.	REMARKS.
	Total area in Acres.	Acres.	Acres.	Acres.	Acres.		
Peshawar Division	2·41	...	2·41	...	2·41	Farash, phulai and shisham.	
Rawalpindi Division	2,109	2,089	20	5	2,104	Kikar, shisham and phulai ...	Work was confined to the filling up of gaps. Groves are kept up along the Grand Trunk Road to shelter travellers.
Umballa Division	1·62	1·62	...	...	1·62	Shisham and siris.	
TOTAL ...	2,113·03	2,090·62	22·41	5	2,108·03		

The other divisions are reported to have no groves.

STATEMENT No. III—(*a.*)

Progress Statement of nurseries planted in the Districts of the Punjab during the year 1885-86.

District.	I. Total area of land set apart for nurseries.	II. Area stocked with plants at the beginning of the year.	III. Area sown or planted during the year.	IV. Area on which cultivation has failed or from which plants will be removed.	V. Area stocked with trees or established plants at the end of the year.	VI. Species of trees cultivated.	VII. Remarks.
	A. R. P.	A. R. P.	A. R. P.	A. R. P.	A. R. P.		
ARID.							
Muzaffargarh ...	33 0 1	28 2 2	4 1 39¶	1 0 14	31 3 27	.....	¶ Area presumably previously stocked, omitted in last return, now added. The work done during the year.
Mooltan ...	2 0 28	.....	2 1 36	0 3 26	1 2 10	Shisham, pipal, bohar, siris, kikar.	1 acre 20 poles previously stocked, but omitted in last provincial return.
Dera Ghazi Khan ...	6 0 0	5 3 0	0 1 0	.....	6 0 0	Shisham, siris, kikar, zizyphus, jujuba (ber), tûn, jaman, mangoes.	
Dera Ismail Khan ...	3 3 0	.....	3 3 0	.....	3 3 0	Shisham.	
Montgomery ...			*Nil.*				
Jhang ...	0 3 0	0 2 0	0 2 0	0 1 20	0 2 20	Mangoes, banyan, pipal, shisham, oranges, siris, grafts of mangoes, grapes, pomegranate, plaintain, apricot, loquats, amrut, pepper tree, Malta olive and tún.	Over a 1,000 trees for fruit and shade have been sold to zamindars at half rates and to officials at full rates. Arrangements for planting fodder trees will be made in future.
Bannu ...	0 1 35	.....	0 1 35*	0 1 0	0 0 35	Shisham, ber mulberry, willow, kikar, dharek.	* Includes one nursery of 4 poles omitted from former returns. Two more were added during the year.
Shahpur ...	28 2 9	1 1 17	25 1 33†	1 0 35	25 2 15	Shisham, kikar, chil, phulai, kachnal, mulberry.	† Acres 16-1-33 now added; erroneously omitted from previous returns.
Hissar ...	22 0 11	14 2 11	8 0 10‡	.....	22 2 21	Tún, shisham, kikar, nim, kachnar, siris, pipal, and all kinds of fruit trees.	‡ Acres 8-2 now added; erroneously omitted from previous returns.
Ferozepur ...	8 1 0	.....	3 3 0	.....	3 3 0	.....	Acres 3-1-0 of this area previously stocked but not shown before.

Very Dry.							
Peshawar ...	5 1 9	.....	5 2 9§	0 0 2	5 2 7	Shisham, mulberry, ghaz, phulai, ber, pipal, dharek.	§ 5 acres previously stocked but not shown in last return.
Kohat ...	*Nil.*			*Nil.*			
Rohtak ...	5 3 21	1 1 23	0 3 9	0 1 5	1 3 27	Siris, shisham, kikar, nim, amaltas, mulberry, pipal and lasura.	
Lahore ...	2 2 17	.....	1 2 25	0 0 4	1 2 21	Jaman, siris, shisham, tut.	New nurseries have been planted at *Bharth*, Baddo and Dugaich.
Karnal ...	8 2 5	8 2 5	.....	.....	8 2 5	.....	
Dry.							
Jhelum ...	4 2 0	.....	4 1 22‖	0 0 1	4 1 21	Shisham, dharek, mulberry, fruit plants.	‖ 2 acres only work of the year.
Gujranwala ...	7 1 20	.....	7 1 20¶	6 1 10	1 0 10	Kikar and shisham.	¶ Owing to a printer's error *three acres* of this were not shown last year.
Gurgaon ...	3 2 2	.....	2 3 12	.....	2 3 12	Shisham, nim, jaman, mango, gular, tún, siris, pipal, and fruit trees.	
Amritsar ...	50 0 0	.....	35 2 0*a*	4 2 0	31 0 0	Shisham, pipal, jaman, ber, siris, tún.	*a* 32-2 acres previously stocked, but not shown in former returns.
Delhi ...	1,208 3 6	.....	1,208 3 6*b*	.....	1,208 3 6	Jaman, guava, pomegranate, peaches, kikar, nim, shisham, ber, pipal, siris, khatta.	*b* Only 2 roods of nursery made during the year. One nursery Shikargarh. Tilauri is entered as 1,208 acres. It is reported that the young trees are in good condition.
Ludhiana ...	12 0 9	.....	6 0 13*	0 0 25	5 3 28	Shisham, siris, jaman, mulberry, pomegranate, and other fruit trees	* Only acres 1-2-10 of this are new operations.
Rawalpindi ...	18 1 37	.....	18 3 3†	14 0 13	4 2 30	Shisham, mulberry, kikar, dharek and phulai.	† These nurseries are for forest trees. Only acres 5-3-32 new operations.
Hoshiarpur ...	2 3 4	.....	2 3 4	.....	2 3 4	Mango, shisham, jaman, eucalyptus.	
Forest Districts.							
Jullundur ...	18 0 16	6 2 36	9 3 20	0 3 20	15 2 36	Shisham.	
Gujrat ...	4 2 0	.....	0 3 0	0 1 0	0 2 0	Shisham and siris.	
Gurdaspur ...	.....	9 0 0	1 0 1	5 2 27‡	4 1 14	Mango, shisham, jaman and garden fruit trees.	‡ This area is now deducted only, as the whole garden was erroneously entered in previous statements.
Umballa ...	*Nil.*			*Nil.*			
Sialkot ...	180 2 6	8 1 0	25 2 14§	1 3 1	32 0 13	Mango, bahera, shisham, siris, mulberry, amaltas, jaman, fruit trees and shrub and forest trees of most kinds.	§ Acres 22-1-20 of this already sown, but omitted from previous returns.
Simla ...	.....	.....	.....	.....	...	...	...
Hazara ...	286 3 20	25 1 15	33 0 33	45 1 38	13 0 10	Chil, diar, alucha, alu-bukhara, bhi, anar, seb, gum trees, hari, &c.	
Kangra ...	42 3 0	.....	42 0 0‖	0 2 1	41 1 39	Deodar, kail, walnut, fir, rai, tos, mulberry, mangoe, shisham, apricot.	‖ Acres 41-3-27 of this were previously stocked, though not shown in last return.
Total ...	1,967 2 16	109 3 29	1,456 0 24	83 3 2	1,482 1 11		

STATEMENT No. III (*b*).

Progress Statement of nurseries planted in the Canal Divisions, Public Works Department, of the Punjab, during the year 1885-86.

	I.	II.	III.	IV.	V.	VI.	VII.
DISTRICTS.	Total area of land set apart for nurseries.	Area stocked with plants at the beginning of the year.	Area sown or planted during the year.	Area on which cultivation has failed or from which plants will be removed.	Area stocked with trees or established plants at the end of the year.	Species of trees cultivated.	REMARKS.
	A. R. P.	A. R. P.	A. R. P.	A. R. P.	A. R. P.		
Bari Doab Canal, 2nd Division	52 3 9	43 3 9	0 1 20	...	44 0 29	Mango, jaman, shisham, kikar and mulberry.	
Ditto, 1st do. ...			*Nil.*				
Swat River Canal ...			*Nil.*				
Chenab Canal Division ...	0 3 0	0 3 0	...	0 3 0	*Nil.*	Shisham and kikar.	
Lower Sutlej and Chenab Division, Inundation Canals.			*Nil.*				
Indus Canal, Dera Ghazi Khan Division	0 0 16	0 0 16	0 0 13	0 0 13	0 0 16		
Muzaffargrah Canal Division.			*Nil.*				
Sirhind Canal, 3rd Division ...	8 2 15	6 0 16	1 2 16	1 1 4	6 1 28	Mango, jaman, bamboos, shisham, nim, tún, eucalyptus and amaltash.	
Sirhind Canal, 4th Division ...	2 5 0	2 0 0	1 1 0	...	3 1 0		
Ditto, 5th do. ...	1 0 13	0 2 28	0 2 29	0 1 30	0 3 17	Mango, bahera, shisham, tún, amaltas, jaman, kikar, kachnal and siris.	
Upper Sutlej Division, Inundation Canal			*Nil.*				
Western Jumna Canal, Karnal Division	...	11 1 15	...	...	11 1 15	Shisham, kikar and tún.	
Ditto, Hansi Division	63 0 3	11 2 15	4 1 28	4 1 37	11 2 6	Kikar and shisham.	
Ditto, Delhi do.	27 3 14	...	27 3 14	...	27 3 14	Shisham.	
Independent Sub-Division, Sirhind Canal	1 2 0	1 0 0	0 2 0	...	1 2 0	Shisham and siris.	
Total ...	158 3 30	77 1 19	36 2 30	7 0 4	107 0 5		

STATEMENT No. III (*c*).

Progress Statement of nurseries planted in the Provincial Divisions, Public Works Department, of the Punjab, during the year 1885-86.

	I.	II.	III.	IV.	V.	VI.	VII.
DISTRICTS.	Total area of land set apart for nurseries.	Area stocked with plants at the beginning of the year.	Area sown or planted during the year.	Area on which cultivation has failed or from which plants will be removed	Area stocked with trees or established plants at the end of the year.	Species of trees cultivated.	REMARKS.
	A. R. P.	A. R. P.	A. R. P.	A. R. P.	A. R. P.		
Peshawar Division ...			*Nil.*				
Kohat, N. W. F. Road Division.			*Nil.*				
Bannu, N. W. F. Road Division.			*Nil.*				
Rawalpindi Division ...			*Nil.*				
Lahore do. ...			*Nil.*				
Amritsar do. ...			*Nil.*				
Umballa do. ...	6 1 36	3 3 16	2 0 33	0 1 12	5 2 37	Shisham, nim, jaman, siris, pipal, lasura, mulberry, mango, bakain.	Nurseries are in the compounds of road bungalows.
Delhi do. ...	...	...	*Nil.*	...	...	...	Now amalgamated.
Simla do. ...			*Nil.*				
Derajat do. ...	6 0 0	5 1 0	0 3 0	...	6 0 0	Shisham, kikar. zeris, zezyphus, ber, tún, jaman and mangoes.	
Jullundur do. ...	0 2 9	0 1 20	...	...	0 1 20	Shisham, kikar and siris.	
Amritsar-Pathankote Railway			*Nil.*				
Total ...	13 0 5	9 1 36	2 3 33	0 1 12	12 0 17		

STATEMENT No. IV (*a*).

Statement showing Income realized in the Districts of the Punjab during the year 1885-86.

Districts.	I.—Ornamental Gardens.							II.—Nurseries.							III.—Avenues and Groves.							IV.—Afforested Wastes.							Grand Total.	Remarks.
	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.		
Arid.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Muzaffargarh	...	9	...	269	...	...	65	...	...	...	...	...	...	...	152	189	130	7	...	2	...	...	...	...	...	...	...	6	829	
Mooltan	51	...	...	1,116	8	...	669	...	1	...	...	...	...	...	311	12	56	...	...	...	...	...	...	...	...	...	...	...	2,724	
Dera Ghazi Khan	...	...	...	84	...	44	...	...	...	...	...	...	...	...	76	...	11	...	...	...	...	...	...	...	...	...	...	...	215	Lopping only valuable near the city.
Dera Ismail Khan	...	...	...	...	...	...	...	...	...	...	...	...	...	...	107	...	...	...	...	278	...	...	...	...	...	...	...	...	385	
Montgomery	...	...	...	60	...	105	...	...	...	...	...	...	...	...	37	...	...	253	...	...	8	...	...	...	...	...	...	...	463	
Jhang	14	...	...	373	...	...	16	...	...	...	...	125	...	...	...	...	7	3	...	...	...	...	...	...	...	...	...	...	538	
Bannu	...	...	...	365	67	32	...	...	...	...	...	...	...	...	188	...	...	...	...	1,450	...	...	...	...	...	...	5,021	...	7,123	
Shahpur	...	...	...	1,028	27	141	...	...	...	...	...	...	...	...	516	710	...	...	...	545	...	...	...	...	...	..	...	...	2,967	
Hissar	116	115	44	498	...	10	20	...	3	3	21	...	...	...	15	64	150	...	...	...	...	...	...	...	..	..	...	...	1,059	
Ferozepur	...	...	...	...	...	...	...	...	...	...	...	...	...	...	432	...	1,813	203	...	240	...	...	...	...	...	...	...	...	2,688	
Very Dry.																														
Peshawar	...	...	...	13	232	228	18	...	...	...	...	...	...	...	...	54	...	...	...	...	...	...	...	...	...	...	...	...	605	
Kohat...																*Nil.*														
Rohtak	...	...	...	...	...	...	...	...	...		24	...	...	...	28	...	380	...	...	...	...	...	...	...	...	...	...	...	432	
Lahore	...	...	...	...	...	...	...	...	...	...	...	...	...	...	111	...	150	...	...	...	...	...	...	...	...	...	...	...	261	
Karnal	...	...	...	...	...	...	...	...	...	...	17	...	...	...	5	...	48	...	...	10	...	...	...	...	...	...	...	...	80	
Dry.																														
Jhelum	...	...	...	218	11	...	244	157	...	569	...	...	...	27	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1,226	
Gujranwala	...	...	...	723	...	...	...	...	...	...	...	...	...	...	...	...	296	...	...	12	...	...	...	...	...	...	...	...	1,031	
Gurgaon	...	...	...	43	2	...	58	...	...	...	24	...	...	13	†664	†664	†665	...	...	414	...	...	...	...	...	...	...	...	2,547	†Rs. 1,993 entered in a lump sum by returning officer, here divided equally between lopping, thinning and dead trees.
Amritsar	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	*3,171	
Delhi	1	..	...	...	...	...	...	...	...	4	...	1	14	...	...	...	195	...	...	...	...	...	...	66	...	...	...	...	281	
Ludhiana	...	...	...	82	...	...	26	...	...	32	...	...	11	...	250	...	1,451	...	...	959	...	...	...	...	...	...	...	...	2,811	
Rawalpindi	77	...	7	515	168	35	796	...	...	...	...	...	...	...	147	...	186	1	...	...	...	...	...	10	...	...	...	...	1,942	
Hoshiarpur	...	...	...	513	11	...	52	...	..	...	...	...	...	...	215	189	2,564	64	...	382	643	...	...	...	...	...	...	...	4,633	
Forest Districts.																														
Jullundur	...	19	...	554	86	...	10	1	...	...	188	36	18	...	147	...	5,328	...	...	420	507	...	...	...	...	...	...	...	7,314	
Gujrat	...	...	...	71	...	...	...	...	...	...	...	...	...	...	2,000	173	2,090	...	...	130	...	...	...	...	...	...	...	...	4,464	
Gurdaspur	...	278	...	197	2	44	34	...	...	48	114	12	...	...	..	40	1,790	...	...	47	225	...	...	...	...	...	...	..	2,831	Promises to develop greatly.
Umballa	...	...	...	3	...	...	6	...	...	...	...	...	...	...	106	...	1,030	265	...	...	50	...	...	...	...	...	...	...	1,460	
Sialkot	...	...	3	982	643	8	298	...	...	...	...	...	...	...	1,654	...	5,588	...	...	502	...	...	...	...	...	...	...	...	9,678	
Simla																														
Hazara	49	161	32	816	84	82	588	3	...	...	...	62	29	7	56	15	25	...	...	74	...	7	...	...	...	...	86	...	2,176	
Kangra	...	...	...	60	...	18	6	...	...	...	...	8	...	...	11	...	215	...	...	...	4	...	...	...	...	...	...	...	322	
Total ...	308	582	86	8,583	1,341	807	2,906	161	4	656	388	244	72	47	7,728	2,110	24,168	796	...	5,465	1,437	7	...	76	...	...	5,107	6	66,256	
Total for 1884-85 ...	...	...	16	4,089	774	845	116	492	...	3,778	134	128	691	6	3,177	293	11,716	448	6	1,821	285	...	...	...	...	...	...	...	28,815	

*Details not given by the Deputy Commissioner.

STATEMENT No. IV (*b*).

Statement showing Income realized in the Canal Divisions of the Punjab during the year 1885-86.

Districts.	I.—Ornamental Gardens.							II.—Nurseries.							III.—Avenues and Groves.							IV.—Afforested Wastes.							Grand Total.	Remarks.
	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.		
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs,	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Bari Doab Canal, 2nd Division ...	...	...	...	38	...	...	...	...	...	...	...	...	...	...	...	981	10,303	...	...	7,837	...	...	...	...	...	...	...	19,159	
Bari Doab Canal, 1st Division ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	16	2,146	8,176	465	...	5,150	501	...	...	...	...	...	...	16,454	
Swat River Canal	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...	...	...	...	...	...	...	...	...	5	
Chenab Canal Division ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...										
Lower Sutlej and Chenab Division, Inundation Canals ...	...	...	...	...	..	...	...	...	108	1,067	63	...	...	43	...	...	...	...	...	...	...	...	...	...	...	...	...	1,281	
Indus Canal, Dera Ghazi Khan Division ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	275	756	...	...	...	...	...	...	...	...	...	...	1,031	
Muzaffargarh Canal Division ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	466	1,115	60	...	205	1,069	...	...	...	..	...	...	2,915	
Sirhind Canal, 3rd Division ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	337	*5,522	*5,522	...	53	3,142	4	...	...	...	...	...	...	14,580	*11044 entered in lump sum by returning officer, divided equally between missing and dead trees.
Ditto, 4th Division ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	53	...	...	...	490	13	...	...	...	...	...	288	...	844	
Ditto, 5th Division ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	11	1,693	...	...	...	986	62	...	...	...	...	...	...	...	2,752	
Upper Sutlej Division, Inundation Canal ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2,632	...	291	...	...	1,438	...	...	...	...	...	...	...	...	4,361	
Western Jumna Canal, Karnal Division ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1,240	442	...	20	2,190	...	...	...	...	...	...	...	3,892	
Do. Do., Hansi Division	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8,302	234	15	568	20	...	...	...	...	...	...	...	9,189	
Do. Do., Delhi do.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	†1,688	†1,688	†1,688	1,035	...	215	6	...	...	...	...	...	...	...	6,320	†Here 5064 entered in a lump sum is the returns, has been divided equally between lopping, thinning and dead trees.
Independent Sub-Division, Sirhind Canal ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12	...	...	...	279	3	...	...	...	...	...	...	...	294	
Total	...	...	...	38	...	...	...	...	108	1,067	63	...	...	43	4,684	12,836	37,398	2,286	68	20,330	3,868	...	...	...	...	...	288	...	83,077	
Total 1884-85 ...	...	...	...	...	...	...	...	...	...	15,219	872	15	579	85	1,172	6,340	31,493	463	894	16,944	902	...	...	...	...	...	...	...	74,978	

Statement No. IV (c)

Statement showing Income realized in the Public Works Department, Provincial Divisions, of the Punjab, during the year 1885-86.

Districts.	I—Ornamental Gardens.							II.—Nurseries.							III.—Avenues and Groves.							IV.—Afforested Wastes.							Grand Total.	Remarks.
	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.		
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Peshawar Division ...	...	...	5	...	...	...	...	...	...	...	...	...	...	...	243	30	14	...	...	140	...	...	...	...	...	...	...	432	
Bannu „	...	...	...	...	...	...	...	...	...	...	...	...	...	...	87	...	...	...	...	...	...	...	...	...	...	...	...	87	
Kohat „															*Nil.*														
Rawalpindi „	...	...	...	...	...	...	...	526	...	1,208	20	...	2,376	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4,130	
Lahore „	...	...	...	181	...	...	...	...	...	...	...	...	...	...	...	...	2,333	...	25	2,105	22	...	...	...	...	...	...	...	4,666	
Amritsar „	...	...	...	...	...	...	...	...	...	...	...	...	...	...	38	...	536	400	...	1,392	...	...	...	...	...	...	...	...	2,366	
Umballa „	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3,596	3	...	707	...	...	...	...	...	...	...	...	4,306	
Delhi „	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Simla „	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Derajat „	...	...	...	84	...	44	...	...	...	...	...	...	...	...	108	...	11	...	...	24	...	...	...	...	...	...	...	271	
Jullundur „	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	145	...	...	924	8	...	...	...	...	...	...	1,077	
Total ...	...	...	5	265	...	44	...	526	...	1,208	20	...	2,376	...	476	30	6,635	403	25	5,292	30	...	...	...	...	...	...	...	17,335	

STATEMENT SHOWING EXPENDITURE INCURRED ON ARBORICULTURAL OPERATIONS.

STATEMENT V *(a)*.

Statement showing expenditure incurred on Arboricultural operations in the Districts of the Punjab during the year 1885-86.

Districts.	I. *Ornamental Gardens.*		II. *Nurseries.*		III. *Maintenance and repairs of established avenues and groves.*		IV. *Extension of avenues and groves.*		V. *Afforestation of waste land.*		Grand Total.	Surplus.	Deficit.	Remarks.
	A. Working.	B. Establishment.	A. Working.	B. Establishment.	A. Working.	B. Establishment.	A. Working.	B. Establishment.	A. Working.	B. Establishment.				
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Arid.														
Muzaffargarh ...	1,473	1,018	...	...	278	2,752	1,315	646	130	324	7,936	...	7,107	
Mooltan ...	4,363	3,250	300	386	1,411	1,133	...	...	...	...	10,843	...	8,119	
Dera Ghazi Khan ...	746	936	406	...	...	3,738	521	1,128	...	...	7,475	...	7,260	
,, Ismail Khan ...	...	...	179	...	...	1,279	...	...	...	...	1,458	...	1,073	
Montgomery ...	2,778	504	...	...	1,000	838	289	341	...	...	5,750	...	5,287	
Jhang ...	1,778	1,578	...	...	...	920	...	...	...	...	4,276	...	3,738	
Bannu ...	306	952	13	70	102	2,488	...	...	...	...	3,931	3,192	...	
Shahpur ...	842	2,275	...	...	...	728	...	...	...	...	3,845	...	878	
Hissar ...	834	1,085	1,250	1,931	403	201	...	...	...	...	5,704	...	4,645	
Ferozepur ...	...	...	...	...	7,432	968	...	...	...	...	8,400	...	5,712	
Very Dry.														
Peshawar ...	733	2,537	40	...	...	2,310	...	...	...	...	5,620	...	5,015	
Kohat ...	...	...	...	...	...	...	...	312	...	...	312	..	312	
Rohtak ...	...	...	29	216	73	4,394	43	813	...	12	5,580	...	5,148	
Lahore ...	...	84	46	...	855	1,945	...	...	...	..	2,930	...	2,669	
Karnal ...	...	...	50	650	827	2,742	...	...	...	...	4,269	...	4,918	

DRY.														
Jhelum	...	1,863	2,058	405	1,119	152	656	28	169	...	...	6,450	...	5,224	
Gujranwala	...	...	1,669	...	...	...	2,782	...	...	...	...	4,451	...	3,420	
Gurgaon	...	281	600	159	605	457	5,264	...	...	970	206	8,542	...	5,995	
Amritsar	...	...	...	295	984	190	7,729	...	...	...	...	9,198	...	6,027	
Delhi	...	136	143	83	60	98	1,974	...	...	...	...	2,494	...	2,213	
Ludhiana	...	1,370	528	497	128	3,005	725	...	...	...	...	6,253	...	3,442	
Rawalpindi	...	1,307	2,380	...	...	89	53	218	...	...	...	4,047	...	2,105	
Hoshiarpur	...	739	506	...	156	364	5,505	...	...	...	...	7,270	...	2,637	
FOREST DISTRICTS.															
Jullundur	...	1,892	1,399	291	1,500	159	1,476	182	217	...	...	7,116	198	...	
Gujrat	...	570	602	60	240	44	1,600	...	50	...	...	3,166	1,298	...	
Gurdaspur	...	610	922	109	264	...	3,660	...	300	...	...	5,865	...	3,034	
Umballa	...	376	385	...	...	259	1,904	...	...	...	...	2,924	...	1,464	
Sialkot	...	1,766	1,430	228	166	469	3,201	...	144	...	...	7,404	2,274	...	Heavy expenditure on gardens is due to the purchase of bullocks to replace several that died.
Simla	...														
Hazara	...	...	156	179	408	...	72	62	...	...	116	993	1,183	...	
Kangra	...	...	374	...	309	275	543	...	314	...	...	1,815	...	1,493	
Total	...	24,763	27,371	4,619	9,192	17,942	63,580	2,658	4,434	1,100	658	1,56,317	8,145	98,206	
Total for 1884-85	...	7,772	7,088	2,856	3,606	20,599	44,897	1,325	2,271	100	228	97,509	1,574	70,268	
												Deficit for	1885-86	90,061	
												Deficit for	1884-85	68,694	

STATEMENT V (*b*).

Statement showing expenditure incurred on Arboricultural operations in the Canal Divisions, P. W. Department, of the Punjab, during the year 1885-86.

Districts.	I. *Ornamental Gardens.*		II. *Nurseries.*		III. *Maintenance and repairs of established avenues and groves.*		IV. *Extension of avenues and groves.*		V. *Afforestation of waste land.*		Grand Total.	Surplus.	Deficit.	Remarks.
	A. Working.	B. Establishment.	A. Working.	B. Establishment.	A. Working.	B. Establishment.	A. Working.	B. Establishment.	A. Working.	B. Establishment.				
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Bari Doab Canal, 2nd Division. ...	888	132	331	550	1,766	486	...	...	...	...	4,153	15,006	...	
Do. do., 1st Division	...	...	...	...	2,041	853	1,766	466	...	...	5,126	11,328	...	
Swat River Canal ...	...	...	2,186	...	1,659	...	...	...	...	...	3,845	...	3,840	
Chenab Canal Division	75	...	...	...	...	...	...	...	...	...	75	...	75	
Lower S. or Chenab Inundation Canal ...	...	...	...	...	734	738	...	...	...	...	1,472	...	191	
Indus Canal, Dera Ghazi Khan Division	...	...	104	133	509	2,171	76	300	...	...	3,293	...	2,262	
Muzaffargarh Canal Division ...	...	...	...	...	584	...	...	...	...	...	584	2,331	...	
Sirhind Canal, 3rd Division ...	...	...	1,171	...	5,940	...	3,994	...	...	...	11,105	3,475	...	
Do. do., 4th Division	...	...	637	...	51	...	8,245	1,769	...	...	10,702	...	9,858	
Do. do., 5th ,,	...	...	534	756	1,881	2,097	...	...	...	...	5,268	...	2,516	
Upper Sutlej Division, Inundation Canal ...	...	...	...	...	768	...	106	...	...	...	874	3,487	...	
Western Jumna Canal, Karnal Division ...	...	...	...	...	191	1,100	...	...	...	...	1,291	2,601	...	
Do. do., Hansi Division	...	...	569	373	304	940	...	19	...	...	2,205	6,984	...	
Do. do , Delhi Division	...	...	...	...	305	506	112	...	550	...	1,473	4,847	...	
Independent Sub-Division, Sirhind Canal	...	...	380	...	633	547	...	...	...	...	1,560	...	1,266	
Total ...	963	132	5,912	1,812	17,366	9,438	14,299	2,554	550	...	53,026	30,051	...	
Total for 1884-85 ...	...	...	14,849	...	25,279	3,118	2,657	...	...	...	45,903	29,075	...	

STATEMENT V (*c*).

Statement showing expenditure incurred on Arboricultural operations on Provincial Roads, P. W. Department, of the Punjab, during the year 1885-86.

Districts.	I. *Ornamental Gardens.*		II. *Nurseries.*		III. *Maintenance and repairs of established avenues and groves.*		IV. *Extension of avenues and groves.*		V. *Afforestation of waste land.*		Grand Total.	Surplus.	Deficit.	Remarks.
	A. Working.	B. Establishment.	A. Working	B. Establishment.	A. Working.	B. Establishment.	A. Working.	B. Establishment.	A. Working.	B. Establishment.				
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Peshawar Division	35	...	105	...	280	616	657	...	...	...	1,693	...	1,261	
Kohat do.	...	...	...	...	734	...	...	...	...	...	734	...	734	
Bannu	...	...	...	...	25	420	...	...	...	...	445	...	358	
Rawalpindi Division	...	...	...	...	136	1,376	...	800	...	...	2,312	1,818	...	
Lahore do.	87	135	110	286	1,228	1,052	175	465	...	105	3,643	1,023	...	
Amritsar do.	...	...	...	...	1,049	...	...	...	...	...	1,049	1,317	...	
Umballa do.	...	...	973	...	2,039	...	302	...	...	...	3,314	992	...	
Delhi do.	...	...	...	...	...	...	...	...	...	...	...	...	...	
Simla do.	...	...	...	...	...	...	...	...	...	...	...	...	...	
Derajat	746	936	406	...	...	5,142	521	1,128	...	...	8,879	...	8,608	
Jullundur Division	...	...	72	60	1,258	347	190	30	...	...	1,957	...	880	
Total ...	868	1,071	1,666	346	6,749	8,953	1,845	2,423	...	105	24,026	...	6,691	

PROGRESS REPORT

ON

ARBORICULTURE IN THE PUNJAB

For the three years 1884-85 to 1886-87.

Price Re. 1-8-0.

BOMBAY BRANCH
OF THE
Royal Asiatic Society.
CLASS

Proceedings of the Hon'ble the Lieutenant-Governor of the Punjab in the Forest Department, No. 115 dated 6th March 1888.

READ—

The Report on Arboriculture in the Punjab during the years 1884 to 1887 submitted by the Officiating Conservator of Forests with his letter No. 1323, dated 1st November 1887.

REMARKS.—This is the first triennial report which has been submitted on arboriculture in the Punjab. The triennial arrangement was adopted partly because it was considered that progress in tree-planting could be better judged when the operations of three years were passed under review together, and partly in the interests of District Officers with a view to reduce the amount of reporting work demanded of them. The present Report furnishes evidence that the triennial arrangement may be expected to fulfil its object in securing a more comprehensive consideration of the subject on the part of reporting officers, as, with few exceptions, considerable care has evidently been bestowed on the preparation of the reports. The want of punctuality, however, in the submission of certain district reports to which the Conservator draws attention is to be regretted. The failure to comply with orders in this respect is especially noticeable in the reports submitted by the Deputy Commissioners of Delhi, Lahore, Hazára, and Dera Gházi Khan.

2. Orders have recently been passed by Government on the Report of the Special Committee on Arboriculture to which reference is made in the last paragraph of the Conservator's letter of 1st November, and these orders may be read with the present review as an exposition of the views of the Lieutenant-Governor on this matter. The report of the Committee contained many useful practical suggestions, but there were also a number of proposals made in it which Mr. Lyall was unable to accept as suitable for general adoption. The labours of the Committee, which consisted of the following gentlemen, —

Mr. H. C. Hill	...	*President,*
Mr. E. O'Brien	...	*Members,*
„ R. Maconachie	...	
„ E. Nicholl	...	
„ A. Reuther	...	

will doubtless have the effect of drawing more systematic attention to the subject of tree-planting in the Punjab; and with a view to securing the permanence of this effect the Lieutenant-Governor has directed the preparation of a new Manual of Arboriculture for the use of District Officers, Committees, and Boards. The manual will consist *(a)* of a sketch of the history of the subject, *(b)* of directions for arboriculture, *(c)* of the rules relating to concessions in connection with tree-planting, and *(d)* of the orders on the subject of the submission of arboricultural tables and reports. The several parts of this manual will be prepared by the Conservator of Forests, the Financial Commissioner, and in the Government Secretariat, and it is hoped that the volume will be issued during the currency of the present year. The principles which it is desired to impress on all bodies and persons interested in arboriculture in the Punjab will be fully detailed in this work, and the Lieutenant-Governor therefore proposes to deal with these questions very briefly on the present occasion.

3. It was stated in the orders passed on the Report of the Special Committee that the form of the Arboriculture Report would be considered in connection with the triennial report for the period 1884 to 1887. The Committee have recommended that a report should be submitted quinquennially instead of triennially in accordance with the scheme of five years' working plans which was advocated by them. The Lieutenant-Governor, however, has not thought it desirable to prescribe a single term over which the working schemes of every district should extend, and the present arrangement under which progress reports are submitted triennially will therefore continue in force unchanged. The revised annual forms and Statements II—VII drawn up by the Committee appear to His Honor to be an improvement on the

forms at present in use and suitable for the purpose in view. They will accordingly be prescribed in the proposed manual for general adoption hereafter. In the classification of districts in Form I it would seem desirable to transfer Hoshiárpur to the class of forest districts, and Ferozepore to that of very dry.

4. The net result of tree-growing operations on avenues during the triennial period 1884—87 has been an increase of 7,093,302 feet, or 1,343 miles in the length of district roads planted. The Lieutenant-Governor agrees with the suggestion of the Arboriculture Committee that lengths should be reported in miles and furlongs and not in feet, and entries in future years should be calculated accordingly. Since the 1st of April 1884 the area allotted to groves has increased by 4,925 acres, from 2,143 acres to 7,068 acres; but of this area 2,735 acres still remain to be fully stocked. Since the same date the area on which nurseries are maintained has increased from 101 acres to 324 acres. An area of 1,208 acres, constituting the Tilauri plantation in the Delhi district, is excluded from this account. It is remarked by the Conservator that there are now only three districts in the Punjáb which do not record an area of greater or less extent under nurseries. These districts are Umballa, Montgomery and Kohát; but from the detailed report of the latter district it would appear that two small nurseries have been established in it, and that young plants are supplied for roads from the Municipal garden. In 1884 nurseries existed in ten districts only. The great importance of forming nurseries and of devising suitable working plans for arboricultural operations in each district has been specially enforced in the Report of the Arboricultural Committee and in the orders of the Lieutenant-Governor thereon.

5. Operations on canal avenues and groves continue to progress satisfactorily, but comparison with the figures reported in former years is rendered difficult by the fact that previous to 1885-86 several Divisions showed the operations on avenues in acres. The increase in the length of Provincial roads planted during the three years under report was 651,616 feet, or 123 miles.

6. The following table shows the expenditure, income and net cost of arboriculture in the districts of the Province during the past five years:—

Years.		*Income.*	*Expenditure.*	*Net Cost.*
		Rs.	Rs.	Rs.
1882-83 ...	...	32,864	99,581	66,717
1833-84 ...	...	50,944	1,39,804	88,860
	Total	83,808	2,39,385	1,55,577
	Average	41,904	1,19,692	77,788
1884-85 ...	...	51,948	1,24,262	72,314
1885-86 ...	...	66,256	1,56,317	90,061
1886-87 ...	...	94,755	1,75,159	80,404
	Total	2,12,959	4,55,738	2,42,779
	Average	70,986	1,51,912	80,926

The income shown in the above table exhibits a steady increase from year to year which is decidedly encouraging. In six districts there was a surplus of income over expenditure. Of a total income of Rs. 8,852 in the Bannu district as much as Rs. 8,299 was derived from grass in avenues, groves and afforested wastes. No explanation of this item has been furnished in the district report, and one should now be called for. The yearly increasing expenditure is a satisfactory circumstance *per se*, as it is most desirable that Boards and Committees should recognise the importance and utility of tree-growing and assign a due proportion of the funds at their disposal to its promotion. At the same time His Honor observes that the figures for the year 1886-87 appended to the present Report bear out the remarks of the Arboricultural Committee regarding inequalities of allotments in different districts. Thus in

the Lahore district the expenditure for the year 1886-87 was only Rs. 2,987, while in the adjacent districts of Amritsar and Gujránwála the total cost of arboricultural operations was Rs. 9,068 and Rs. 6,046 respectively. In Delhi apparently no money was spent by the District Board in connection with avenues, groves or nurseries, and the allotment of the Ráwalpindi district was expended almost entirely on ornamental gardens; but it is explained that planting on the roadsides is carried on in this district through the agency of the zamíndárs. Possibly this agency could be utilised throughout the Province more extensively than at present.

7. Good work is being done in the Gurgaon district, where the District Board, under the guidance of Mr. Maconachie, has taken in hand the afforestation of certain parts of the hill wastes. An interesting account of these is given in paragraph 4 of the Report. Tha reports of the Delhi, Bannu, Shahpur, Hoshiárpur, Gujrát and Siálkot districts relate to the last year only of the triennial period of 1884—87, and that from Montgomery covers two years. In all cases the triennial report should deal briefly with the whole period of three years, and the statements appended to the Provincial report should contain statistics for the same period. These triennial statements should be compiled in the office of the Conservator of Forests. The Deputy Commissioner of Jhang has submitted no report at all, and appears to be satisfied with the statement that arboricultural operations failed in this district owing to the scanty rainfall. The Lieutenant-Governor is unable to accept this explanation as sufficient. Considerable activity has been shown in planting operations in the Ferozepore district, and the success of the imported seed of the date-palm is very encouraging. His Honor regrets to notice that the members of the District Board of Ludhiána are said to have failed to exercise due supervision over the arboricultural operations under their control. No mention has been made in the report of the Shahpur district of the planting operations at Sakesar, and enquiry should now be made regarding these. The facts stated on page 66 of the Report regarding the provision of fodder by cropping trees on the Upper Sutlej Canals are extremely interesting.

8. In the orders of Government on the Report of the Arboricultural Committee it was stated that Mr. Lyall agreed with the Committee that it is to the Commissioners of Divisions that the chief administrative authority in the supervision and encouragement of arboriculture must be entrusted. His Honor hopes that these orders will be borne in mind on future occasions. In the present case two Commissioners, of the Jullundur and Deraját Divisions, only appear to have offered any remarks on the district reports which they forwarded to the Conservator of Forests, and the former alone has treated the subject in a comprehensive manner. It is not necessary that Commissioners should write a separate divisional report of arboricultural operations, as in many instances the differences of the natural conditions of districts are so great as to nullify the value of any general comparison of the results in all cases. The remarks of Commissioners should be recorded in continuation of the report of each district, and this will allow each report to be forwarded to the Conservator of Forests as it is considered and remarks are recorded on it. The district reports may also be conveniently written on half-margin. Any general remarks which Commissioners may desire to make regarding expenditure and the like can be submitted in the form of a separate brief memorandum when the last of the district reports of the Division is forwarded. In all district reports the planting operations of large Municipalities should be briefly noticed. Such explanations of district reports as may be required by Commissioners and the Conservator should at once be called for by a brief memorandum. The information wanting in various district reports and statements on the present occasion should have been supplied in this way before the Provincial report was submitted to the Local Government. The Conservator is requested to arrange with the Secretary to Government, in the Department of Public Works, for the more complete preparation of reports on tree-planting on Provincial roads.

9. With the present report Mr. Maconachie has submitted a map of the Gurgaon district showing the extent to which the roads in the district have been stocked with trees, old and new growth being indicated by different colours. The Lieutenant-Governor would be glad to see a similar map of each district in the Province submitted with the next triennial report. The symbols and references to be used in the map should be arranged by the Conservator and should be the same for each district. The ordinary skeleton maps which have been prepared for all districts will no doubt be found suitable for illustrating arboriculture as well as other reports. Such a map would indicate at a glance the extent of the progress made up to date in tree-growing on avenues in each district, and it would be convenient if the localities of nurseries and groves were also indicated upon it. Further orders regarding the form of district triennial reports and of the Provincial report will be issued in connection with the manual to which allusion has been made in paragraph 2 above.

10. The Conservator has not brought to the notice of Government in the present report instances in which the efforts made by local officers and local bodies appear to him to merit special commendation. This should be done in all future reports. To judge from the data before him, the Lieutenant-Governor is disposed to think that the efforts made in the Gurgaon, Rohtak, Simla, Ferozepore and Jullundur districts deserve to be specially mentioned.

ORDER.—Ordered, that the above remarks be printed and circulated with the Report as usual.

Also, that they be published in the *Punjab Government Gazette*, and be forwarded with the usual number of copies of the Report to the Government of India in the Department of Revenue and Agriculture.

Also, that they be forwarded to the Secretary to Government, Department Public Works, with reference to concluding portion of paragraph 8.

By order of the Hon'ble the Lieutenant-Governor,

H. C. FANSHAWE,

Offg. Junior Secretary to Government, Punjab.

Punjab Government Press, Lahore.—6-3-83—380.

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No. 1323.

FROM

A. E. WILD, ESQUIRE,

Offg. Conservator of Forests, Punjab.

To

THE JUNIOR SECRETARY OF GOVERNMENT, PUNJAB.

Dated Lahore, 1st November 1887.

SIR,

I have the honor to submit the Progress Report on Arboriculture in the Punjab for the three years 1884-85 to 1886-87. The last narrative report was that for the year 1883-84. For the years 1884-85 and 1885-86, statements only were submitted.

In the present report I have followed the sequence given in the report for 1883-84. Statements for the three years are, however, not incorporated; those for 1884-85 and 1885-86 having been submitted separately, I considered it merely necessary to furnish those of the last year, 1886-87.

I greatly regret the delay which has been unavoidable in the submission of this report. It is, however, the first tri-ennial report as yet prepared, and in consequence, and on account of numerous errors and omissions in the statements forwarded by Districts &c., certain enquiries and references were rendered necessary, which required time.

In addition, in spite of every endeavour to secure the punctual submission of the District reports, that of the Delhi District was not received before the 23rd September, and it was merely a desire on my part to render the report as complete as possible, which induced me to defer its submission, and so run the risk of a rebuke for want of punctuality rather than on the score of incompleteness. Had I omitted all reports not received by the 1st September, the date on which the Provincial Report was due to Government, I should have had to send incomplete returns from no less than four Districts. If I have erred I trust I may be excused.

In compliance with the orders contained in para. 2 of the Review on the Statements for 1885-86 I append a list of those reports received late.

Statement showing dates of receipt of Arboricultural Reports from Districts.

Districts.	Date of reminders issued.	Date of receipt in Conservator's office.
From Commissioner, Derajat—		
Dera Ismail Khan	... ...	21st July 1887.
Muzaffargarh	... ...	
To all Commissioners, Punjab	No. 617, dated 21st July 1887.	
From Commissioner, Lahore Division—		
Mooltan	... ...	26th ,, ,,
Jhang	... ...	
Montgomery	... ...	
From Commissioner, Peshawar—		
Peshawar District	... ...	1st August ,,
From Commissioner, Lahore—		
Gurdaspur District	... ...	3rd ,, ,,
From Commissioner, Jullundur—		
Jullundur District	... ...	8th ,, ,,
From Commissioner, Lahore—		
Lahore District	... ...	10th ,, ,,
From Commissioner, Peshawar—		
Peshawar District	... ...	19th August 1887, (narrative report).
From Commissioner, Lahore—		
Amritsar District	... ...	21st August 1887.
From Commissioner, Derajat—		
Bannu District	... ...	28th ,, ,,
From Commissioner, Rawalpindi—		
Gujranwala	... ...	30th ,, ,,
Gujrat	... ...	
Shahpur	... ...	
Sialkot	... ...	
Rawalpindi	... ...	
From Commissioner, Delhi—		
Karnal	... ...	31st ,, ,,
Hissar	... ...	
Rohtak	... ...	
Umballa	... ...	
Simla	... ...	
From Commissioner, Peshawar—		
Hazara District	... ...	3rd September 1887.
From Commissioner, Lahore —		
Lahore District	... ...	3rd Sept. 1887, (narrative report).
From Deputy Commissioner, D. G. Khan...	... ...	21st September 1887.
From Commissioner, Delhi—		
Delhi District	... ...	23rd ,, ,,

Under instructions contained in Government letter No. 145, dated 29th March 1886, to address of Senior Secretary to Financial Commissioner, and in accordance with the suggestions put forward in para. 10 of the Review of His Honor the Lieutenant-Governor on the report for 1883-84, a Committee sat at Lahore on the 26th April and following days, to consider the best means of encouraging the development of arboriculture in the Punjab, and drew up a report which was forwarded to the Financial Commissioner. Government orders having, however, not yet been passed on the recommendations therein made, the form or substance of the present report has in no way been influenced by them.

A.—General Remarks regarding the seasons.

1. The rainfall of the past year has on the whole been much below the average. The greatest deficiency occurred in the arid Districts, and in Peshawar and Kohat, where, excepting Hissar, not only was the actual fall scarcely more than half the average, but there was an almost total absence of the usual cold weather rain, resulting in some Districts in an actual drought. In the other Districts of the Province the figures do not differ much from the average. Of the dry Districts, 6 registered a slightly diminished fall, while 3 were above the average. The Forest Districts, with the exception of Gurdaspur, all show a rainfall somewhat less than usual.

The year does not therefore compare favourably with the two previous ones, in which the rainfall was in both years in excess of the average.

The rainfall figures furnished by Districts are generally speaking not to be relied on, and the figures for the past year have therefore been obtained from the Meteorological Reporter.

B.—DISTRICT ARBORICULTURE BY GOVERNMENT AGENCY.

(*a*).—*General.*

1. The following statement shows the progress made in arboricultural operations on avenues during the three years 1884-87 in totals for each year :—

Year.	Length of roads on which avenues have been planted or are in course of construction.	Length of single lines stocked with trees or established plants at the beginning of each year.	Length of single lines planted during each year.	Length of single lines on which cultivation has failed, or on which trees or established plants have been destroyed or felled.	Length of single lines stocked with trees or established plants at the end of each year.
	Feet.	*Feet.*	*Feet.*	*Feet.*	*Feet.*
1884-85 ...	47,407,276	25,072,360	1,840,373	1,348,284	25,564,449
1885-86 ...	48,219,934	25,564,449	5,072,717	2,151,861	28,485,305
1886-87 ...	55,360,248	28,485,305	5,125,026	1,444,669	32,165,662
Figures for the three years.	55,360,248	25,072,360	12,038,116	4,944,814	32,165,662

It was requested that special attention might be paid to the accuracy of the returns for 1886-87, and all errors and omissions of former years adjusted. In many Districts this has been done, but there is still much to be desired in this

respect, though the length of avenues and areas stocked at the end of 1886-87 may be considered as more than approximately correct.

It will be seen that a length of 8,058,306 feet has been added during the three years to the total length of the district roads in the Province on which avenues have either been planted or are in course of construction, increasing the length of 47,301,942 feet under operations in 1883-84 to 55,360,248 feet at the end of 1886-87. Single lines of 25,072,360 feet had been successfully stocked at the beginning of the period under report; during the three years 12,038,116 feet have been planted out, while failures or deaths have occurred on 4,944,814 feet. Thus there has been a net increase of 7,093,302 feet in the length of established avenues, and assuming that each avenue consists of two lines only, there remains therefore an unplanted length of district roads of 39,277,000 feet against 34,400,000 in 1883-84.

The above figures however include errors and omissions of former years, and can therefore scarcely be used for comparison. Of the length shown as planted in 1885-86, no less than one half, or 2,538,971 feet, was due to more careful measurements and to the inclusion of lengths previously planted, but omitted from former returns, the actual figures for the year being 2,533,746 feet instead of 5,072,717 feet. In like manner former discrepancies materially alter the figures for the past year, and when deductions as noted in Statement I are made, reduce the length planted during the year from 5,125,026 feet to 1,990,966 feet, and the failures from 1,444,669 feet to 757,308 feet.

It is remarkable that though the past year was towards its close very unfavourable to arboricultural operations, the net results, taking the actual figures, are better than those of the two previous years, though behind those of 1883-84.

The most noticeable feature is that while throughout the Province the winter rains generally failed, and in some Districts there was actual drought, the failures recorded during the year are much below those of former and far more favourable years.

No explanation has been given of the large losses in the Delhi and Lahore Districts in 1885-86 noticed in the review on the report for that year.

3. The subjoined is a statement showing the operations carried out in groves :—

Year.	Area on which groves have been planted or are in course of construction.	Area stocked at the beginning of each year.	Area planted during each year.	Area of failures.	Area stocked at end of each year.
	A. R. P.	*A. R. P.*	*A. R. P.*	*A. R. P.*	*A. R. P.*
1884-85 ...	2,818 2 12	1,786 1 26	650 0 34	37 2 7	2,399 0 13
1885-86 ...	5,887 2 24	2,399 0 13	2,255 2 19	476 1 11	4,178 1 21
1886-87 ...	7,068 3 2	4,178 1 4	422 2 30	267 2 36	4,333 1 15
Figures for the three years.	7,068 3 2	1,786 1 26	3,328 2 3	781 2 14	4,333 1 15

Since the 1st April 1884 the area allotted to groves has increased by 4,925 acres from 2,143 acres to 7,068 acres. Of this area 4,333 acres are said to be fully stocked, leaving a balance of 2,735 still to be taken in hand. An area of 3,328 acres was added during the period under report, while failures occurred on 781 acres, thus the net increase has been 2,547 acres. This happened chiefly in the Bannu District where so large an area as 1,084 acres was added in the year 1885-86, though evidently not the work of that year. The operations of the past year show a net increase of 155 acres; they are less than those of the two previous years, but compare favourably with the figures of 1883-84, in which year 160 acres were planted, while failures occurred on 104 acres. The failures of the year were small; they happened chiefly in the Rohtak and Jhang Districts and were due to the exceptional dryness.

(*b*).—Detail of work done—Avenues and Groves.

Arid Districts.

4. Steady progress has been made in the Muzaffargarh District and the trees planted are reported to be in good condition. Only 7½ miles of the road to Alipur remain unplanted; on the poorer soils, shisham has been abandoned and farash substituted, which ought to give better results. The Commissioner recommends ber and jhand being more extensively planted, and I entirely agree with his remarks. The success of the mangoe is doubtful, 200 plants put out in 1885-86 failed, but were replaced and the new ones are doing well. The report confuses groves with nurseries; there has been an addition in the former of 48 acres. The apparent large number of deaths on avenues is attributable to the entry of 3,33,478 feet in 1886-87, to correct former errors, the length of actual failures of that year being only 5,560 feet.

5. The great cost of watering in the Mooltan District necessitates operations being limited. The opening out of the Sidnai Canal will do much however to lessen this difficulty, and already an area of 45 acres on this canal has been given up for a grove and nursery on which the initial cost will be about Rs. 1000. Further use is being made of the canal, and all roads within its influence are being rapidly planted up.

6. In the Dera Ghazi Khan District, operations though on the whole satisfactory were much retarded by scanty rainfall and unseasonable heat. Avenues were extended by only 1½ miles, on which 450 trees were planted, and about 1,500 gaps were filled up with new plants. The shisham is said to be the only tree really suited to the District though the kikar does well on kallar soil. The suggestion of the Deputy Commissioner to use the better kind of mangoe for groves is, I think, worthy of trial, while it is satisfactory to learn that the people are becoming generally alive to the advantages of planting orchards, which are said to be greatly on the increase. No extension of the Chhabri-Kot-Haibat plantation took place during 1886-87 on account of the impossibility of irrigating more of the land. On the kallar soils of this plantation I would recommend a trial of the species said to thrive on saline soils *viz:* "Pithecolobium saman."

It would be a matter for regret were planting operations on the Dera Ismail Khan and Mithankot roads discontinued, and it is to be hoped that the Provincial contribution may not be permanently withdrawn.

7. There is nothing particularly noteworthy in the Dera Ismail Khan report. A large number of trees died on the Bhakkar and Jhang road owing to continued drought in the Thal.

8. The Montgomery report treats merely of the two years 1885-87; little progress was made and a large portion of the District remains unplanted. 3 acres were added to groves; work in this District needs concentration.

9. The Deputy Commissioner Jhang reports that arboriculture failed from want of rain and for this reason sends no report. He refers no doubt to the year 1886-87 only; but a glance at the statements will show that no advancement has been made and that both avenues and groves have decreased since 1884. Increased activity is however promised which appears necessary.

10. The Deputy Commissioner Bannu also remarks only on the year 1886-87 which being unfavourable to arboriculture, operations in part of the District were consequently unsatisfactory. It is to be regretted that all the more favourable sites for planting being already occupied, work progresses with less energy and success. It will be a decided advantage to plant out the treeless road to Dera Ismail Khan, and the establishment of a nursey at Gandi Khan Kheyl to further this project should not be lost sight of. The proposal to send a young man from the District to be trained at the Dera Dun Forest school is a move in the right direction and one worthy of example. Some further information seems called for with regard to the 1,084 acres groves which though brought on the statement in 1885-86 seems to date from some previous year

11. The report of the Shahpur District is also for the year 1886-87 only. The year was unfavorable and little progress was made. During the three years however, avenues have been extended by 91,738 feet while an area of 69 acres has been added to groves. Arboricultural operations in this District are however in good hands, and much is hoped for from the experience of Dr. Henderson. Some kikar groves and the trees along the Bhera-Shahpur road were thinned out. A grove of shisham on the bank of the Jhelum at Lagri being threatened by the river had to be cut down.

Operations at Sakesar were apparently begun in 1884, and if carried on during the last three years, on the plan advocated in the Provincial Report for 1883-84, should have made some progress. It would have been interesting to have learnt the results, but this project finds no place in the present report. It is to be hoped that it has not been abandoned.

12. The Hissar District now including half of Sirsa is for the first time placed among the Arid Districts in accordance with the new classification adopted by the Arboricultural Committee. It is reported that owing to the general unfavourableness of the seasons, arboriculture has not been a success during the three years, and the Deputy Commissioner recommends that operations be restricted to limited areas. This is good advice, it is of no use to attempt more than can be done thoroughly and properly; and by the addition of nurseries, and better supervision much can be attained. No progress in groves is reported, but a number of trees appear to have died.

13. The report from the Ferozepore District which shows considerable and satisfactory progress during the last year under report was prepared by the Secretary to the District Board, who translated and circulated the rules drawn up at the Arboricultural Committee for the guidance of the establishment, but

with what result is not stated. There has been a great reduction in the cost of planting consequent on irrigation by District Canals, the rate decreasing from Rs. 8·55 per 100 in 1885-86 to Rs. 3·32 during 1886-87. During the two years 1885—87, 2,73,060 trees were planted, of which 63,139 are reported as having died. 1,96,960 were planted in avenues, the rest in groves. The operations of 1886-87 far exceeded those of previous years and comprised the planting of 1,39,712 trees in avenues and 63,956 on 28 acres of groves of which the failures were 20 and 34 per cent. respectively. The Commissioner remarks on the inaccurary of the statements of this District and apparently there is some explanation called for. It is quite true that notwithstanding there must have been considerable failures year by year and failures have been shown in the District returns, still as the length of line stocked at the end of the year in those returns has, invariably been given as the new plantings of the year, *plus* the length stocked at the beginning of the year, it has, I can only imagine been assumed when preparing the printed statements, that the failures must have been replenished during the year under report, and only the new work entered in column III. I do not agree with the conclusion arrived at by the Commissioner, but in either case the procedure is incorrect and greater attention should be required in future. Latterly, early spring planting has been resorted to, in addition to rains planting, and I recommend its adoption in other Districts where the seasons are short and more time is required. The Darogah who is in charge of the District arboricultural operations has been sent to the Changa Manga plantation for practical training, and will no doubt greatly improve himself. Where it is not possible to make use of the Dehra Dún Forest School this plan might with advantage be followed elsewhere. Experiments with the Australian salt bush did not succeed, but fresh sowings have lately been made. The success attendant on Mr. O'Brien's first endeavour to cultivate the date palm is very encouraging. More than 3 maunds of Persian Gulf and Mooltan seed was sown on over 2 acres, and the young plants are reported as mostly flourishing, some of them being 10 to 12 inches in height. Mangoes also came on well. The Deputy Commissioner is very hopeful of eventual success and improvement in the food supply of the district.

A report on the Kehruwalla plantation is attached to the report of the Ferozepore District. 423 acres were acquired for Rs. 5,179 in the late Sirsa District, of which 45 have been planted to date. The expenditure incurred is only a little in excess of the income received from the unplanted portion and the future prospects are encouraging.

I would recommend that the distance of the ditches be reduced to 10 or 12 feet and that shisham be mixed with the kikar.

Very Dry Districts.

14. From Peshawar there is nothing particular to record. 29,697 trees have been planted, but the results are not given, and it seems doubtful whether they are commensurate with the large cost of Rs. 13,592. The endeavours of the Deputy Commissioner to ensure success by planting with earth and by affording better protection are commendable, as are also the operations conducted by Captain Deane, Assistant Commissioner, Mardan.

15. In Kohat the seasons were generally unfavourable, but operations were not much affected, the trees receiving water from the Toi and other streams. 3,239 trees were put out, of which 1,200 died. The scheme prepared by the District Committee in 1884 will no doubt be further elaborated on the recommendations of the Arboricultural Committee being promulgated. There

are only small funds allotted to arboriculture and much cannot be accomplished with Rs. 500. Willows can only be recommended where there is plenty of moisture and under this condition cuttings invariably succeed.

16. The prolonged drought of the latter part of 1886-87 seriously hampered operations in the Rohtak District. 24,091 trees were planted out, of which 4,287 died. Portions of the Jhaggar Birs were enclosed with a view to form fuel and fodder reserves and a plan has been sanctioned for improving the Birs. The Deputy Commissioner doubts whether the result will be worth the cost, but in absence of the plan I should not advise its being put aside without careful consideration. Up to the present, however, the accumulation of cut grass in the Birs is still undisposed of and it seems doubtful whether they are required as fodder reserves. A plan has been decided on to plant 3 miles of road in each tahsil yearly, which requires further elaboration. Groves have suffered considerably and repairs seem called for.

There was a severe storm in May 1886 which greatly damaged many trees on the different roads and largely increased the revenue of the year.

The Deputy Commissioner complains of the unsuitabilty of the district generally for tree-planting, and many of the trees put out are reported as stunted and deformed. This could to a certain extent be avoided by artificial means, but the expense would be great.

17. In Lahore the rainfall was below the average and unseasonable, yet reports of Tahsildars on the condition of existing avenues and groves are more satisfactory than they have been in previous years. Planting and tending road-side trees were the chief works carried out, though the planting of shelter-giving trees on road-side groves is also receiving attention. The Deputy Commissioner reports 33 miles of avenues added during the three years, but I am unable to reconcile these figures with the 7,58,720 feet shown by the statements, even after deducting the work done in municipalities. No explanation of the large loss of 4,04,710 feet in 1884-85 has been given. New groves have been formed near encamping-grounds at Chunnian, Bhai-Phiru and Luliani, and 50 trees have been planted at Kasur to replace dead ones. Objection is taken by the Deputy Commissioner to the operations being expressed in the statements in feet and proposes miles, a proposal which has already emanated from the Arboricultural Committee.

18. In the Karnal District the rainfall was about the average in 1886-87 and much above it in the two previous years ; still the losses compare favourably, being ·9 against 7 and 11 respectively.

The arboricultural operations in this district are scarcely worthy of note, and I agree with the Deputy Commissioner that more attention is necessary in this respect. They comprise transplanting of 3,014 trees to replace 3,802 lost. The report mixes up nursery plants with established trees, which should be avoided in future. Nurseries are constantly changing both in area and in the number of seedlings they contain, when possible of enumeration, and I recommend that in future they should be kept distinct.

The method of making Local Boards' members responsible for the protection of trees within a certain limit of their residences will, I am of opinion, avail little. The large incomes of the municipalities ought to contribute more than the paltry sum they do, to arboricultural operations.

DRY DISTRICTS.

19. In the Jhelum District operations were retarded consequent on scanty rainfall, chiefly in the Talagang tahsil. Nevertheless during the three years 38,922 trees were planted, of which 6,541, or 16·80 per cent. only succumbed.

20. But little new work was done in the Gujranwala District, the filling up of gaps constituting the chief operations.

In all 15,436 trees were planted, 11,110 to fill blanks and 4,326 on new roads. Sowing in drills, where the soil is good, is also undertaken. The seasons were generally favourable though the rainfall of the last two years was unseasonable.

21. Gurgaon has been fortunate in its Deputy Commissioners, and well directed energy has left its mark. The report attached evinces too the great interest taken in arboricultural operations by the present Deputy Commissioner, Mr. Maconachie. 1,300 trees have been put out. There is only one grove which is steadily progressing and will shortly be ready for thinning.

One of the great features of the report is the conservancy of hill areas, which beginning in 1883 now embraces an area of 1,732 acres entirely closed to grazing and 2,000 acres closed to cuttiug. It is gratifying to learn from the Deputy Commissioner's report that the area now closed for only four years has already thousands of young hill trees on it, and that the areas of 1885 show a great difference. It is very possible, I think, that more than 7 years will be required to secure the trees from goats. The Deputy Commissioner proposes a scheme for the next three years which will be further elaborated hereafter, and attaches a very useful map showing the present state of the development of road avenues, which, though excellent in itself, could not well be printed.

22. In Amritsar 4,315 trees were planted along new roads, in addition to the filling up of gaps, on which 11,138 trees were used. On some road-sides spontaneous growth is showing itself. Complaints are made of the small funds at disposal for arboriculture, but it is possible to accomplish a great deal with Rs. 8,000.

23. The report of the Delhi District treats merely of the year 1886-87. The rainfall was slightly in excess of the average, and though tree-planting is reported to be making good progress on metalled roads, the operations of the year have not been extensive. 450 trees only were planted, while 9,000 died owing to bad soil and the ravages of white ants. Planting is not resorted to on kutcha roads, sowing being found an efficient and cheap plan of extending avenues, but the non-success of the work of the year under report, in which though germination was good the young plants were destroyed by heavy rainfall, makes it doubtful whether it can be advantageously carried out on the roads in question. At any rate a change in the method of sowing seems called for, and I would here advocate sowing on ridges. Kikar sowings on irrigation bands were, as might be expected, more successful. Of 2,245 trees planted at police posts 470 failed.

Operations in connection with the planting of selected spots taken up in 1883-84 have been only partially successful, but it is satisfactory to learn that the subject is nevertheless engaging attention.

No report has been received from the Municipal Committee for reasons explained in a note by the Secretary. It would have been interesting to have learnt the progress of the attempt to clothe the Ridge, commenced in 1883-84.

24. The absence of winter rain in the Jullundur District in 1886-87 necessitated the employment of a large watering establishment. The chief avenue operations were the completion of the Jullundur and Thandah road, of which 3 miles were planted; the planting of 9 miles on the Jullundur-Nurmahal road; 7½ miles on the Nakodar-Sidhwan road, and 8 miles on the Rohan-Phillour road. About 75 per cent. died on the latter road, being far away from the tahsil, supervision was inefficient and watering neglected. Gaps and blanks have been filled up. The work was carried out according to the provisions of a plan framed in 1885 and may be considered satisfactory. Three of the existing groves were washed away by the river, reducing the number to 20.

25. The report from the Ludhiana District shows a deplorable state of affairs, explained by the Deputy Commissioner as being due to the transfer of arboricultural operations to the District Boards. No doubt such transfers have in some instances led to bad results, but where the Deputy Commissioner himself takes an interest in the work this should not be the case. 3,607 trees were planted on road-sides, at the very high cost of more than Rs. 1 a tree. The zamindars are said to strongly object to avenues of any kind as tending by their shade to reduce the cultivated land, and the Deputy Commissioner proposes to confine operations. I would, however, suggest some other way out of the difficulty and perhaps that advocated in the Gurdaspur District might be successful.

26. The rainfall in Rawalpindi was insufficient, and during the latter part of 1886-87 there was actual drought; notwithstanding good progress has been made and 1,24,424 trees were planted of which, however, 63,199 failed. Operations are limited to the plain part of the District, and are chiefly carried on through the agency of the zamindars. In addition 7,266 trees were planted around public buildings and 1,039 in the different municipalities. 176 acres of groves were purchased from the zamindars by the District Board for Rs. 6,000 in 1885, and the area has therefore considerably increased.

27. There is no progress reported from the Hoshiarpur District, operations being limited to the maintenance of existing roads and the planting out of 10,212 trees to fill gaps. With so large an establishment at disposal more might have been done, and it is evident better supervision and control is urgently required.

FOREST DISTRICTS.

28. The report of the Gujrat District is very meagre, and contains no account whatever of the work done; it has, however, to judge from the statements been very small, and is not worthy of notice.

29. In the Gurdaspur District 13,633 trees have been planted on 1,81,384 feet of single line of road. Statement No. I shows, however, 30,96,572 feet as stocked during the three years, and some explanation should have been given of this large discrepancy which is apparently due to the inclusion of omissions of former years. Operations have hitherto been restricted for want of planting

material, but now that nurseries have been formed there will be no further difficulty in this respect. It is satisfactory that suitable trees only are now selected for avenues. 21 acres of waste land in the Civil station were planted with mangoes and fenced. Complaints regarding the destruction of crops through avenue planting also come from this District; injury would no doubt be lessened by planting the trees further from the fields, and this, where the roadway is not thereby much narrowed might with advantage be done.

Adverting to the large deficit in this District of Rs. 10,032 during the three years, the slack market and low prices obtained, the Deputy Commissioner, on the ground that the District is generally well wooded, proposes the curtailment of operations, but I very much doubt the advisability of such a step though possibly a revision of establishment might be beneficial.

30. Progress in the Umballa District has been slow, and as explained by the Deputy Commissioner only 13,052 trees have been planted, 883 on 9,737 feet of new roads and 12,169 to fill up blanks—2,233 of these died, in addition to 2,954 matured trees.

31. The report of the Sialkot District treats merely of the year 1886-87. It states that the rainfall was above the average and unseasonable, but this is not borne out by the Meteorological Reporters statements which show a decrease in rainfall and would better account for a season unfavorable to arboriculture. But little progress is recorded. Great damage was done by storms and frost.

32. In the Simla District no arboricultural operations are undertaken. Lists of trees planted about the station accompany the District Municipal report.

33. The filling up of gaps formed the chief work in the Hazara District where the rainfall was above the average. The experiment to afforest the Sarbun hill close to Abbottabad is worthy of notice, and should, if possible, be extended.

34. Steady progress has been made in the Kangra District where 9,40,192 feet were planted with a loss of 5,11,601, representing 46 per cent. success. These figures do not agree with the Statement I now submitted, which has been altered to allow of omissions and errors of former years. The work in the Hamirpur tahsil showed the best results, and that undertaken in Kulu, Plach, Palampur and Nurpur is also considered fair. The filling up of gaps constituted the chief operations in Kangra and Dera, where nearly all the main roads already possess good avenues. It is much to be regretted however, that the limited means at the disposal of the District Board greatly hampers systematic operations and many young trees die annually for want of watering, and until further funds can be provided I would recommend attention being paid to the maintenance of existing avenues rather than to extension.

c.—Government Gardens.

The remarks on Government gardens made in the last narrative report have received but little attention, and it has again to be observed that from many Districts much more useful and interesting information might have been vouch-

safed. In 1883-84 it was stated that in 14 districts Government gardens were not mentioned at all; in the present year only 10 districts notice them.

There is a Municipal garden at Dera Ismail Khan, but here our information ends.

From the Kutchery and Government gardens at Dera Ghazi Khan some 2,000 trees, chiefly fruit trees were distributed during the year 1886-87. The Burg Kushi and Khar gardens at Fort-Munro in this district are reported as progressing satisfactorily and many trees have been planted out from them on to the Fort-Munro hill.

The Municipal garden at Kohat is greatly improving under the supervision of the Deputy Commissioner. The deficit is steadily decreasing, and in 1886-87 was only Rs. 121; it is shortly expected to be self-supporting. The introduction of select fruit trees is desirable.

Fruit tree cuttings were planted in the gardens at Jhelum, Sheikupura, Chak-Jamal, Choya Saidan Shah and Pind Dadan Khan in the Jhelum District and are said to be flourishing.

It is mentioned that in the Delhi District there are three Ornamental gardens, the Queens garden, the Roshnara, and the Kudsia Bagh, but further than that they have brought in an income of Rs. 3,149 with an expenditure of Rs. 9,843, nothing is noticed regarding them.

The five gardens in the Jullundur District are chiefly maintained by the District Board. With the exception of the Nawashahr Baradari gardens, none are yet self-supporting, but the revenue is steadily improving. The Empress or Town-Hall garden is more ornamental than lucrative.

In the Rawalpindi District there are gardens at Rawalpindi, Chattar (on the Rawalpindi and Murree road), Hassan-Abdal, Futtehjang and Pindigheb. 3,102 fruit trees were planted in them during the last three years and 2,419 were distributed to zamindars and private individuals. The English apple and pear trees given away in the Murree tahsil are doing well, and arrangements have been made to increase the supply by the formation of a nursery at Charra-Pani, 10 miles below Murree on the main road.

Between fifteen and sixteen thousand fruit and other tree cuttings were set in the garden at Gurdaspur, but many died owing to want of rain. Mangoe, Mawa and Eucalyptus were also sown or planted.

Ornamental gardens exist at Dharmsala, Palampur, Kulu, Hamirpur and Dehra, but no detailed account of them has been vouchsafed by the Deputy Commissioner of Kangra.

In accordance with the orders contained in the latter part of para. 7 of His Honor's review on the Arboricultural Report for 1883-84, a report on the Simla Municipal Orchards for the year 1886-87 has been extracted from the annual Report of the Simla Municipality. The distribution of fruit trees has commenced, and during the year 871 trees of kinds were given away gratis to people residing within a radius of 20 miles from Simla, leaving a stock of 2,000 available for next year's distribution.

The Municipal report also contains an account of the Annandale garden which has been extracted in part only. The ordinary work of the garden has been similar to that of former years. The stock of saleable plants has been greatly increased both in number and variety though there was a falling-off in the quantity of fruit due to hail storms and the removal of trees for the extension of the race-course. Much improvement has been made by superior cultivation, by the erection of new buildings, and by the opening out of roads, and the stock has increased 10 fold in value. 4,862 plants have been put out about the station, 2,000 cuttings planted and 22 maunds of seed sown. The nurseries also received attention. The blue gum suffers much from snow, which I have also observed to be the case at Abbottabad, and this species cannot arrive at perfection at such altitudes.

No mention has been made of the gardens at Mooltan, Sialkot or Hazara.

LIBRARY OF THE

(*d*).—NURSERIES.

The following statement contains the information available with regard to nurseries :—

Year.	Total area of land set apart for Nurseries.	Area stocked with plants at the beginning of each year.	Area sown or planted during each year.	Area on which cultivation has failed or from which plants will be removed.	Area stocked with trees or established plants at the end of each year.
	A. R. P.	A. R. P.	A. R. P.	A. R. P.	A. R. P.
1884-85 ...	1,633 3 18	101 1 39	10 0 39	1 3 9	109 3 29
1885-86 ...	1,967 2 16	109 3 29	1,456 0 24	83 3 2	1,482 1 11
1886-87 ...	2,031 2 30	1,482 1 11	73 1 5	19 1 1	1,536 1 15
Figures for the three years.	2,031 2 30	101 1 39	1,539 2 28	104 3 12	1,536 1 15

This is a most important branch of aboriculture and it is satisfactory to notice from the District reports that much greater attention has been paid to the necessity of maintaining a sufficient and suitable supply of young plants for all requirements and for distribution as opportunity may offer. I am glad to note that while in 1884 only 10 districts showed an area of 101 acres as stocked with plants, the returns for the past year show this to have been increased to 1,536 acres and that there are now only three districts in the whole Province which do not record nurseries of more or less extent. Indeed some Districts report the area stocked as sufficient for all requirements, but of this I am very doubtful, and if the area of 1,208 acres of the Tilauri plantation in the Delhi District, which should not appear as a nursery, be deducted from the area stocked at the end of 1886-87 it will be seen that there is only as yet the small area of 328 acres in the whole Province from which plants are available, which must still be considered as utterly inadequate.

Setting aside the area of 1,208 acres above-mentioned in the Delhi District, the operations of the three years comprised a net increase of 227 acres. The year 1885-86 showed the greatest activity; in 1886-87, 73 acres were added against 10 in 1884-85 and 18 in 1883-84.

In Muzaffargarh no new nurseries are being formed, the present area being said to be sufficient for all requirements.

The Mooltan District has small plots in gardens, no special areas for nurseries being set aside.

In Bannu mulberry and shisham trees are easily obtainable elsewhere, and the small nursery at Mowrang is chiefly used for exotics and experiments. Still the District Committee is fully alive to the importance of the matter and intend starting new ones. There has been a large extension in Hissar though the success is not very great. Ferozepore adds 7 new nurseries and reports that special attention has been given to this portion of the arboricultural operations. In Kohat there are 2 nurseries, but they are reported as insufficient and I should say rightly so.

Rohtak shows 7 nurseries, able to supply all requirements. In the Lahore District 4 new nurseries have been laid out in the Lahore tahsil, 5 in Kasur and 1 in Chunnian.

From 3 nurseries at Karnal 3,000 plants have been removed, but though no new sowings were effected, no change has been made in the area. It is explained that they still contain more than sufficient for the possible requirements of the District, and this may be true if operations are not carried out on a more extended scale than during the last few years.

In Jhelum a small addition was made. Material for the years work was obtained from the Pira-Ghaib nursery, and from the small preserves maintained along the sides of the roads. Choya Saidan Shah and Ponyra nurseries are in good condition.

Small nurseries have been laid out near roads in the Gujranwala District and are maintained by small payments to zamindars.

In Amritsar 4 new nurseries were established and a large number of fruit and timber tree seedlings put down of which however many died.

One nursery at Phillour in the Jullundur District was surrendered to Government, but another is to be formed in its place; one new one was established. From the existing nurseries 45,267 plants were supplied free of cost to the Executive Engineer, the Military Department and to zamindars.

Ludhiana contains 5 nurseries, sufficient to supply the District, but not conveniently situated. There has been no actual increase in the Rawalpindi District, the entry in the statement being on account of former errors.

Of 10 additional nurseries in the Gurdaspur District three failed for want of proper arrangements for watering. Hazara shows one nursery less, the small area at Sultanpur having been cleared as not required.

In Kangra 43 acres are already stocked, and at Dharmsala there are now large numbers of deodar, kail and chil. The Nurpur nursery contains Chinese mulberry, which is in demand for sericulture purposes.

Existing nurseries were maintained in the Dera Ghazi Khan District and in addition to furnishing material for District requirements supplied fruit trees free of cost to the zamindars.

With the exception of a slight addition to Police nurseries no change has been made in the Delhi District during the past year. The Tilauri plantation of 1,208 acres is still entered on the statement of nurseries in this District.

e.—Cattle Trespass and Lopping.

My experience leads me to the belief that sufficient stress is not laid on the importance of preventing cattle straying, especially along avenues. I firmly believe that in very many instances the failure of trees, I cannot say death, (because very often the trees recover sufficiently to live but not to thrive) is due to nothing but browsing. This point is remarked on by the Deputy Commissioner of Sialkot, and I am fully convinced that not only is far more attention in this respect required, but that, it would well repay the extra trouble.

Only one District notices the matter, and yet in every District there must be great damage year by year. No. doubt in some Districts the evil is much alleviated by fencing and the erection of crates and mud or brick enclosures as in Gurdaspur, Jhelum and Gujranwala, but even these safeguards are generally insufficient to keep off goats and camels. It is difficult to devise means to effectually check this evil, and I can only recommend stricter supervision and heavy punishment coupled wherever possible, with such artificial measures as are practicable.

Lopping, it is observed, has received much greater attention during the last few years, and in many Districts it is now carried out under more or less responsible supervision. The extensive loppings in the Gujrat District were supervised by the Deputy Commissioner himself, but though this cannot of course be done in many cases, it is nevertheless imperative that whenever possible the work should be inspected. From Muzaffargarh we learn that lopping was done more extensively in 1886-87, but without any due supervision. In Kohat it is performed under the direct superintendence of the jamadar and head malis, and in Jhelum and Amritsar it has received attention and the old plan has been greatly improved on. In Delhi hand-saws are used. Karnal, however, reports that as a rule it is scarcely allowed except when absolutely necessary, and then it is done with great care and in accordance with Conservator's instructions.

Notwithstanding the improvements above noted, I am of the firm conviction that stricter supervision is still necessary in many Districts, and in order to maintain the required standard, the attention of District Officers and Local Boards must continue to be directed to this subject.

f.—Fodder Trees.

A fuller report on the subject of fodder trees having been called for in paragraph 5 of the review on the report for 1885-86, I propose to treat the matter under a separate heading, though the scanty remarks on the subject contained in the several District reports scarcely warrant this procedure.

A glance at the names of the trees in column 6 of Statements I, II and III, will show that many of the trees planted are fodder producing trees, but broadly speaking in no District is any special attention paid to the rearing of

trees destined chiefly to furnish fodder. It is generally admitted, and considered sufficient in most Districts, that many of them already abound with trees which in time of necessity can be used for the purpose of fodder, and consequently no special attempts in this direction have been made. In this category belong the Districts of Amritsar and Delhi. It will be observed that the Commissioner of Jullundur took action on the Government of India letter No. $\frac{1019}{148\text{-}2}$ of 5th December 1885, and called for special reports on this subject in January 1886. The present reports from this Division, however, treat the matter as of little moment. In the Jullundur District wells are considered to be sufficient to prevent famine, and therefore the special rearing of fodder trees is not called for in the opinion of the Deputy Commissioner. Worthy of note are, however, the endeavours to introduce the cultivation of the date palm in the Ferozepore District, and success in this direction will in addition tend to largely increase the food supply of the District.

From Peshawar and Hazara it is reported that fodder tress are not grown or planted, but with regard to the latter it is within my knowledge that a considerable stretch of road is planted with mulberry.

Kohat is a hilly District with good waste, and fodder trees are considered unnecessary. This statement, however, scarcely coincides with the further remark of the Deputy Commissioner, that the year 1886-87 being a most exceptional one, cattle suffered severely on lands dependent on rain, and it is obvious that had tree fodder under such circumstances been available, it would have greatly relieved the distress.

In the Rawalpindi District small attempts seem to have been made, and 700 trees of dhaman, khoa and kolia were planted out in the villages at the foot of the hills.

In Kangra it is said to be not necessary to consider this subject.

In this connection I would bring to notice the remarks made in the report of the Upper Sutlej Canal Division, which are of great interest, and clearly show how the rearing of fodder trees may at times be a source of considerable profit as well as of great benefit to the surrounding population.

g.—Financial.

The following statement shows the income and expenditure of the three years under report, which for purposes of comparison is given year by year:—

Year.	Income.	Expenditure.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
1884-85	31,863	1,05,043	...	73,180
1885-86	66,256	1,56,317	...	90,061
1886-87	94,755	1,75,159	...	80,404
Total ...	1,92,874	4,36,519	...	2,43,645

The report being a tri-ennial one it has been found possible to partially correct the printed statements for the year 1884-85 by addition of the figures for the Kangra and Ludhiana Districts which have now been supplied.

The figures for the year 1883-84 were—

			Rs.
Income	...	...	50,945
Expenditure	...	...	1,39,804
	Deficit	...	88,859

It will be seen therefore that during the year 1886-87, there has been a very considerable increase in revenue, the income of the year being Rs. 28,499 in excess of that for the previous year, and Rs. 43,810 above the figures for 1883-84. Notwithstanding this enlarged revenue the expenditure is fairly proportionate with that of previous years, being only Rs. 18,842 above that of 1885-86 and Rs. 35,355 in excess of that for 1883-84.

Of the Districts Gujrat shows the largest increase in revenue consequent on the extensive thinnings carried out in 1886-87.

The expenditure has increased over the figures for 1885-86 under almost every head, but chiefly under the afforestation of waste lands accounted for by purchase of some 169 acres of land in the villages of Guraora and Prithipura of the Gurgaon District, which however as the land pays revenue may have to be re-sold.

Comparing the figures of 1886-87 with those of 1883-84, we find a very considerable increase under Ornamental gardens chiefly on account of establishment but also in connection with the working charges. The charges for nursery establishments have nearly doubled themselves, while the expenditure on working has been considerably reduced. Other heads show little difference, though there has been a marked decrease in the cost of establishment on groves.

The deficit of the year 1886-87 compares favourably with those of previous years, and is less than that of 1885-86 and of 1883-84 by Rs. 9,657 and Rs. 8,455 respectively.

Ornamental gardens show a deficit of Rs. 38,975 in 1886-87 as against Rs. 37,521, and Rs. 12,760 in 1885-86 and 1883-84 respectively, and have not therefore as yet improved in their remunerativeness.

The transactions of the three years under report show a deficit of Rs. 2,43,645 and those of the last year Rs. 80,404.

C.—DEVELOPMENT OF ARBORICULTURE BY PRIVATE PERSONS.

This subject was dealt with at great length by the Committee which sat in April 1886, and the recommendations then put forward will no doubt greatly arouse activity in this respect and be the cause of a more lively interest being taken in the matter by the people generally. It is satisfactory to record that notwithstanding the unfavourableness of the past year, considerable progress appears to have been made in this branch of arboriculture. In the Rohtak District, if I understand the statement attached to the Rohtak report rightly, there are now small plantations, chiefly of kikar, in no less than 320 villages, 91 of which have been made without pecuniary aid, and the rest at the expense of Government. In many cases these plantations are most promising, and, though small, will soon become valuable. The result of the experiment has been most encouraging and efforts are being made to extend and repair the areas. Endeavours

are being made in the Karnal District to induce village communities and individuals to interest themselves more in planting, but so far the result has not been satisfactory.

It is to be regretted that the arrangements in the Hissar District to give up part of the old Customs line for cultivation, on condition that the rest should be sown with kikar, could not be carried out for want of rain. The plan seems a good one and should be persisted in, though at the same time it is within my recollection that a similar experiment years ago in the Gujranwala rakhs entirely failed. The scheme for taking up land for planting purposes in the Gurgaon District has proved successful, and 12 plots of uncultivated land aggregating 425 acres have been secured. The Committee bears the cost of planting while half the produce goes to the zamindars. 183 acres of the 425 have already been more or less successfully sown, while the rest has been partially sown or enclosed. In addition to the trees at present tried, I would recommend phullai, jhand, and *prosopis glandulosa*.

It is encouraging to learn from the report of this district that the example set by Government is beginning to take root, and that in 10 or 12 villages the people themselves are attempting conservancy; which, if continued, should lead to most satisfactory results. The system of rewards for private planting is said to have been more effective than anticipated, and I would advocate its adoption in other parts.

In the Amritsar District plants are given gratis from nurseries and gardens to the zamindars, who however take little interest in planting work. In Ludhiana nevertheless they appear to be glad to get fruit trees, and the Deputy Commissioner is cultivating the taste; and in Rawalpindi a large number of trees have been planted by zamindars at wells, tanks and musjids.

It is to be regretted that the scheme drawn up for the Delhi District by Mr. Maconachie in 1883-84 has not advanced, and that no plots have as yet been sown by the zamindars as contemplated.

II.—CANAL ARBORICULTURE.

Reports have this year been received from all Divisions, and give full detail of the arboricultural operations undertaken during the period under report. Some are, however, very discursive and could with advantage be much curtailed in future.

Previous to 1885-86 several Divisions showed the operations in avenues in acres, which renders a comparison of the figures for the years under report difficult.

The progress of the two years 1885—87 is as follows:—

	Length of single line planted during the year in feet.	Length of failures in feet.	Length stocked at end of year in feet.
1885-86	9,361,509	2,57,400	19,445,303
1886-87	9,82,721	7,94,744	19,633,280

There has thus been a considerable falling-off, but the figures compare favourably with those of the year 1883-84 in which 160,046 feet were planted with 44,430 feet failures. Of the failures during 1886-87, 571,160 feet are due to the correction of errors of previous years by which the actual length on which trees have died is reduced to 223,584 feet.

No statement of groves was submitted for 1883-84; during 1886-87 there has been a net increase in the area stocked of 428 acres, 3,219 acres having been planted during the year with 2,791 acres failures, as against 2,339 acres and 1,653 acres respectively in 1885-86.

Under nurseries 9 acres less were planted than in 1885-86. 44 acres of the 61 acres shown as failures during the year are consequent on corrections, which cause the area stocked at the end of 1886-87 to fall below that of 1885-86.

Spontaneous growth plays a great part on some of the canals, but chiefly in the Karnal District of the Western Jumna Canal, the Muzaffargarh Division, the Upper Sutlej and the Lower Sutlej and Chenab Inundation Canals, where planted avenues are rare, existing trees being mainly due to natural causes. In many instances operations are thus rendered comparatively easy, but where the conditions are not so favourable, as on the Sirhind Canal, it is not possible to depend on rainfall alone, but resource must be had to irrigation to ensure success.

In the Upper Sutlej Division the chief work consisted in planting and maintaining chouki compounds, and the extension of groves on the Lower Sohag and Para Canal. In the Hansi Division of the Western Jumna Canal, berm sowings of kikar did not succeed, though similar operations with shisham on the Swat River Canal and in the 3rd Division Sirhind Canal are well reported on and considered efficient and inexpensive. In the latter Division out of 3,03,176 feet of avenues added, no less than 2,86,150 feet were thus sown and are progressing favourably. This method is far less expensive than planting, and where possible it should, I think, be resorted to.

Gaps in existing avenues were filled in most Divisions; in the Delhi Division of the Western Jumna Canal, the 1st and 2nd Divisions of the Bari Doab Canal, the formation and improvement of plantations and gardens formed the main work. The incursion of the Indus causes considerable loss to established trees on the Indus Canal and increases the difficulty of future operations, planting having to be undertaken at a greater distance from the Canal.

The remarks of the Executive Engineer, Upper Sutlej Division, regarding the fodder furnished by the kikar trees lining the canal banks are interesting, and show how even canal avenues can be made to help in years of scarcity. From this source Rs. 2,632 were realized; the trees were not damaged and the zamindars were greatly benefited.

Damage by cattle grazing is complained of in the 2nd Division, Bari Doab Canal, where supervision is inefficient, and I would recommend the stoppage of grazing on the Lahore branch where natural reproduction is said to be possible until the existing gaps have been filled up.

The large length of failures in the 3rd Division Sirhind Canal during 1885-86 was consequent on the felling of 26,000 feet for construction of a telegraph line.

FINANCIAL.

The following table shows the financial results of canal arboriculture during the three years under report compared with those of 1883-84 :—

Year.	Income.	Expenditure.	Surplus.
	Rs.	Rs.	Rs.
1884-85 ...	74,978	45,903	29,075
1885-86 ...	83,077	53,026	30,051
1886-87 ...	57,404	56,486	918
Total ...	2,15,459	1,55,415	60,044
1883-84 ...	52,141	48,016	4,125

It will be seen that the last year has been very unfavourable in a financial point of view which has not been sufficiently explained in the Divisional reports.

The total income, while Rs. 5,263 in excess of that of 1883-84, is less than that of 1885-86 by Rs. 25,673. This large decrease is chiefly due to the non-existence of dead trees in the 2nd Division Bari Doab Canal and the 3rd Division Sirhind Canal, and to smaller sales of thinnings and loppings.

The total expenditure differs little from that of previous years, but is Rs. 3,460 and Rs. 8,470 in excess of that of 1885-86 and 1883-84 respectively.

III.—ARBORICULTURE ON PROVINCIAL ROADS.

No notes or remarks on Provincial roads arboriculture have previously been submitted, and reports have now only been received from 5 out of the 11 Divisions.

From the statement of avenues attached it will be observed that while during the past year there has been an actual increase of 2,81,315 feet of single lines planted, the length fully stocked at the end of the year has, consequent on deductions on account of previous errors, omissions and transfers, decreased from 1,02,28,877 feet at the end of 1885-86 to 76,88,716 feet, but exceeds that at the end of 1883-84 by 6,51,616 feet.

In the absence of more detailed information I am unable to fully explain the deductions of the past year though some attempt has been made on the statement; they are, I believe, mostly due to certain transfers and changes which have taken place.

Statements of groves were not submitted previous to 1885-86. No actual addition has been made during 1886-87, the 26 acres shown as planted pertaining to some previous year.

In nurseries there has been an actual increase of 2½ acres during 1886-87, the 4 acres shown as planted in the statement being reduced by the deduction of areas previously stocked but omitted to be shown.

There has been a decrease in Income during 1886-87 of Rs. 1,379 as compared with 1885-86, partly due to the transfer of the Bannu Division to the District, and to fewer sales of dead trees from nurseries. Expenditure is also less by Rs. 4,893; there is an increase of Rs. 2,344 under establishments, and a decrease of Rs. 7,237 under working.

The deficit of the year is Rs. 3,177 as against Rs. 6,691 in the previous year.

I have &c.,

A. E. WILD,

Offg. Conservator Forests, Punjab.

I.—DISTRICT ARBORICULTURE.

DELHI DIVISION.

DELHI MUNICIPALITY.

Note by Officiating Secretary.

With reference to Deputy Commissioner's letter No. 197, dated 5th April last and subsequent reminders, I beg to state my inability to submit a report on arboriculture from the information before me. It is far too meagre even to attempt to do so. The total information consists of the following items :—

The total number of trees planted in 1885 was 540 for which 55 enclosures were erected. In 1886 trees 291, enclosures 1,138. In 1887 trees 1,658, enclosures 411. That there are three ornamental gardens; *viz* :—

	Income.			*Expenditure.*		
	Rs.	A.	P.	Rs.	A.	P.
Queen's garden	675	14	3	4,065	0	0
Roshnara	1,443	8	0	3,275	0	0
Kudsia	1,030	0	0	2,503	0	0

As for actual area planted or stocked or the number of nurseries and groves, &c., I have no informotion before me whatsoever. The statements are herewith returned.

I.—DELHI DISTRICT.

General remarks.—The rainfall during the year amounted to 31·83 inches and was in excess of the average rainfall by 5 inches. There were no other events specially affecting arboriculture.

Description of work.—Avenues.—Tree-planting is making very good progress on the following metalled roads :—

1. Humayun-Safdarjang Tombs road.
2. Delhi-Najafgarh road.
3. Suniput-Bahalgarh road.
4. Suniput-Murthal road.
5. Badurpur-Mehrauli road.

The total length of road No. 1 (2½ miles) is stocked with trees which have attained a height of between 5 and 20 feet and are in a flourishing condition. 150 jaman, shisham and other trees were planted in blank spaces on the road during the year under report at a cost of Rs. 12-8-0, and were provided with hedges for protection from cattle. They are doing well. The whole length of the Delhi-Najafgarh road is stocked with kikar trees, and the first seven miles of it, from its junction with the Rohtak road, with a second row of other species of trees. The trees are thriving and progressing favourably. 300 plants obtained from the nursery on the road were planted during the year under report in extension of the existing avenue. The young trees were covered with pula in the cold season for protection from frost at a cost of Rs. 8-6-0. Half of the Sunipat-Bahalgarh road (length five miles) is stocked with trees, but 5,000 of the young trees planted in previous years did not take root, owing to saline efflorescence in the soil, and dried up during this year. The young trees on the road were covered with pula in the cold season. The Suniput-Murthal road is stocked with kikar trees in a length of 3 miles and with a second row of trees of other species in about a mile. No additions were made to the avenues on the road during the year under report. Trees were planted during the year under report in about ¾th of a mile in extension of the 2 miles on the Badarpur-Tughlukabad road. 4,000 young trees are reported to have been destroyed by whiteants on this road during the year. There is a permanent establishment of malis, bhistis and chowkidars on all these roads, the charges of which during the year under report amounted to Rs. 1,512-13-1. The avenues are developing steadily and growing into fine shady avenues.

Avenwes on kacha roads.—No water-carriers or malis are kept up on any of the other district roads which are unmetalled and hence no trees are planted on them. Kikar seed is, however, sown on their sides every year in the rainy season, this being a cheap mode of raising trees not requiring much care and labour. Kikar seeds were sown during the year under report on the following roads at a cost of Rs. 28-1-0 :—

1. Delhi-Paim Bari road.
2. Delhi-Basant road.
3. Delhi-Dabirpur road.

The seeds are reported to have germinated, but the saplings were destroyed by heavy rainfall. The seedlings raised on the various other kacha roads in previous years are in good condition. It is not possible to enter into details as the statements of arboricultural operations which have been prepared this year by the Local Boards differ considerably from the previous year's statements which were prepared by the Tahsildars, and it is not certain which of them are reliable. With a view to ensuring accuracy in the preparation of the returns, a register of arboricultural operations has been opened in this office, and forms containing the necessary headings have been sent to the Local Boards and members in charge of "bands," groves, &c., with orders to measure the length of avenues, and enumerate the trees on each road, &c., to fill in the forms carefully, and to return them to this office to be entered in the register.

Police buildings.—The following extract from a report furnished by the District Superintendent of Police, who is in charge of the arboricultural operations at Police Stations, rest-houses and road-posts, shows the progress made in tree-planting at these places during the year under report:—

"At the beginning of the year there were on Police lands 3,507 trees, and during the year 2,245 more were planted.

"Of these 470 have failed, leaving 5,282 trees now alive. Nim, siras, shisham and kikar have been principally planted, nim flourishes."

The cost of establishment was Rs. 268-2-3.

Irrigation bands.—Kikar seed was sown in the rainy season on the embankments and slopes of 16 irrigation bands.

A great number of the seedlings are established. Forms similar to those for roads referred to above have been sent to the members in charge of the bands, but have not been yet returned by them filled in. The trees are watched and weeded by the chowkidars kept up at the bands.

Plantations at tanks.—The arrangements made for taking up plots of land at Fattehpur, Assaula, Mehrauli, Guman-Hera, Dhindasa and Suredah for tree-planting were described in the Arboriculture Report for 1883-84. The land taken up at Fattehpur-Assaula was provided with an enclosure wall and a trench and trees were planted in it. The land taken up at Mehrauli was also similarly planted. The plantations at both these places are in good condition. No land has been given by the zamindars adjacent to the tank dug at Guman-Hera. The attempt to make plantations in the land taken up adjacent to the tanks dug at Dhindasa and Suredah has not been altogether successful. Seeds have been sown in both these plots every year in the rainy season; but owing to negligence on the part of the lambardars, and the want of irrigation, the seedlings are destroyed. Rs. 39-2-0 and Rs. 17-3-0 were expended in sowing shisham and kikar seeds at Suredah and Dhindasa respectively during the year under report. The operations were only partially successful. The question of improving the condition of these plantations is engaging attention, and it is hoped that good results will be achieved in a very few years.

Scheme for the encouragement of tree-planting by zamindars.—The scheme prepared by Mr. R. Maconachie for the encouragement of tree-planting by zamindars was described in the Arboriculture reports for 1882-83 and 1883-84. No plots have been sown by the zamindars as contemplated in this scheme.

Nurseries.—There are 18 nurseries in the district as shown in the statement. Nine new nurseries have been shown by the District Superintendent of Police in his statement for the first time. But they are not new, as the District Superintendent of Police states that the trees in many of them are large. Shiekargah-Pilaori is also not a nursery but a plantation. All the nurseries are well stocked with young trees and trees are taken from them for transplantation on roads especially from those situated on roads.

Lopping.—The branches of trees on the following roads were lopped during the year under report:—

		Cost. Rs.	A.	P.
1.	Palam-Basant road	24	13	6
2.	Chhaensa-Ballabgarh road	5	12	6
3.	Faridabad-Majahaoli road	3	2	0
4.	Delhi-Paimbari road	13	4	0

The trees were lopped with hand saws (*aris*) by malis in the cold season between December and March.

No special attempts have been made to grow fodder trees in any particular parts of the districts, but a considerable number of the trees growing on the roads and in the groves and plantations in this district are kikar, bor (Ficus Indicus), pipal (Ficus Religiosa), beri (Tizyphus Jujuba), mulberry and siris, the leaves and twigs of which are used as fodder for cattle.

Establishment.—The establishment employed during the year on the various roads, groves &c., consisted of malis, bhistis and chowkidars, and cost Rs. 1,726-13-11.

The arboriculture operations were under the charge of the Local Boards. The financial result was as follews :—

	Rs.	A.	P.
Income	678	4	6
Expenditure	2,100	4	8

2.—GURGAON DISTRICT.

General remarks.—Gurgaon has been fortunate in having a succession of Deputy Commissioners who have taken interest in making the roads of the District as green as possible. Mr. Oliver did a great deal; among other things, the fine avenue between the Civil Station and the Railway was started by him as well as the beautiful line of mellingtonias on the Najafgarh road. Mr. Roberts who succeeded him was quite as keen, if he was more economical, in the prosecution of arboriculture, and the results became yearly more manifest. Miles of the Sohna road became covered with shade, and in many other parts successful plantings were made. After Mr. Roberts came a rather weaker time, as Mr. Stogdon and Major Napier were not here long enough to undertake a steady policy. But the good results of former efforts were not lost, and when I came to the District in April 1885, I was delighted to see how much had been effected in an arid district by continuous and well applied energy. While acting here in 1883 for a short time, I had been able to give a new turn to arboriculture by initiating the conservancy of portions of the large hill areas, and this beginning has been carried on since. There are now several such areas under conservation and already exhibiting good results. The present state of the development of road avenues in the district is shown in the accompanying map* which explains itself.

Description of work.—The more important special work done in avenues since 1884 may be summarised as follows :—

1.	On the Gurgaon-Sohna road	5,000 trees.
2.	On the Gurgaon-Najafgarh road	550 „
3.	On the Gurgaon-Mahrauli road	600 „
4.	On the Gurgaon-Farukhnagar road	400 „
5.	On the Sohna-Palwal road	1,500 „
6.	On the Nuh-Ferozpore road	2,100 „
7.	On the Rewari-Jhajhar road	1,600 „
8.	On the Ferozepore-Alwar road...	750 „
9.	On the Nuh-Rewari	500 „
	Total ...	13,000 trees.

This enumeration has been revised cutting off odd numbers, so that it may show a safe margin below the real outcome. It doubtless looks small, and does not of course represent any of the self-sown trees which are pretty numerous in parts.

The only plantation of grown trees that we have is one in the Civil Station of 22¼ acres. This is nearly full of young trees that in a few years will come on for thinning; they were prumed last year, and are growing all the faster in consequence.

Other plantation grounds have been recently taken up for trees as shown in the following list :—

Class.	No.	Name of plantation.	Tahsil.	Extent in acres. A.	R.	P.
A.	1	Inayatpur	Gurgaon	78	2	0
	2	Farukhnagar	„	73	2	0
	3	Khurrampur	„	31	0	0
B.	4	Dharuhera	Rewari	63	0	0
	5	Mahesri	„	20	0	0
	6	Kutbpur	„	12	3	10
C.	7	Guraora	Rewari	23	3	25
	8	Chang	„	31	1	0
	9	Jiwara	„	7	2	0
	10	Chilhar	„	7	1	20
	11	Palla	„	38	0	0
	12	Nalhar	„	38	0	0

* *Note.*—Map not printed.

The terms in each case are the same, *viz.* that the expenditure in planting be undertaken by the committee and that half the produce goes to the zemindars. I have divided the plantations into three classes—in the first class the plots are enclosed and have been more or less successfully sown; in the second, enclosures have been formed, and partial sowing done; in the third, either the enclosure has not been yet formed, or after forming enclosure the sowing has been entirely unsuccessful. The land in each case is uncultivated ground

Inayatpur may be said now to be an all but certain success. Farukhnagar and Khurrampur in the order named will also probably be renumerative. The other places will require more attention; in fact, as in arboriculture operations generally, we have erred in attempting too much. Where I have been able to see after things frequently in person, there energy has been displayed: otherwise the work flags. But this is the old story. If after fair trial a plot proves too inferior, we must give the land up—it will be something at any rate to have it demonstrated that trees cannot grow; meanwhile we have ground enough to use all our energy in for several years. The trees we try to grow are shisham, nim, kikar, ber and farash.

The third branch of arboriculture is the conservancy of hill areas. There are two degrees of conservancy, (*a*) from feeding, (*b*) from cutting. The areas under strict conservancy with the dates on which conservancy began, are as follows:—

		A.	R.	P.		
1.	Sohna hill	312	2	0	...	1883
2.	Nathupur	271	0	0	...	1883
3.	Bhundsi	62	2	0	...	1885
4.	Khol	387	0	0	...	1885
5.	Tankri	258	0	0	...	1887
6.	Sohna (additional)	441	0	0	...	1887
	TOTAL ...	1,732	2	0		

(*b*) 1. Khol and surrounding villages, about 2,000 acres.

No doubt these operations are small, but they are real—the Sohna hill has thousands of young hill trees now. Bhundsi is nearly as good; Nathupur shows something; and Khol a great difference. It has been shown clearly that closing such areas against grazing is all that is necessary to raise trees, and what is more, it seems certain that 7 years will prove ample time to secure the trees, and that after that time grazing of goats, cows, sheep and oxen, will be safe. The preserved grounds are also conspicuous for the improvement in the grass which now has a good bottom.

One of the most cheering things connected with this 'forlorn hope' kind of work, in the force of example shown in the fact that the villagers in several parts seeing what we are doing, attempt themselves to enforce conservancy; this has happened in at least ten or twelve villages, and even such modified restrictions produce real improvement in the appearance of the hills. If we had our hands strengthened only so far as to prevent grazing in certain blocks, to be changed in turn, the successful working out of the whole area is perfectly certain. Meanwhile, I have quite enough encouragement to keep me going.

Rewards have during the last two years been given for private tree-planting operations by the zamindars, and my personal observation leads me to think that an impulse has been given to work in this direction, considerably more effective than I hoped for. Very many villages will now point out a tree or two, or several trees together, carefully fenced in and watered, called 'sirkari,' meaning of course grown at the suggestion of the District authorities, and the thing if persevered in will grow.

Expenditure.—Expenditure has been large, I am not afraid to say too large. We still need improvement in system; no easy matter, however, remembering the materials we have to work with. Local interests are very strong; the malis in some places think themselves entitled to wayside pensions, bhistis have an uncomfortable knack of hanging on under the auspicies of soft-hearted Tahsildars, and so on. One large item of expenditure needs notice. We have bought a large plot of land in the two villages of Guraora and Pirthipura, about 169 acres, at a very low rate. But here a new condition presents itself; the land pays revenue, and it seems doubtful whether under these circumstances we can afford to use it for trees. If this should on further examination prove to be the case, we shall have to re-sell the land.

Future plan of operations.—In conclusion I may sketch out the work of the next three years as at present intended. The scheme will be elaborated hereafter as a Working Plan of Arboriculture in Gurgaon.

Avenues.—Finish up work on the Station, Kutb and Sohna roads; Sohna-Palwal and Palwal-Hathin roads. Malis and bhistis should be taken away from these roads by November 1890.

Prosecute planting on the Najafgarh and Basai roads; the Rewari-Jhajjar and Rewari-Narnaul roads; the Nuh-Rewari and Sohna-Ferozepore roads; and fill up gaps in various other lines.

Plantations.—Maintain development of Class A, and plant selected plantations in classes B and C (selections not at present certain).

Hill areas.—Complete Sohna and Bhundsi conservancy and carry on the work on the other areas. We shall probably not do as much as we propose, but we shall, I trust, effect a good deal.

3.—ROHTAK DISTRICT.

General remarks.—The rainfall at each Tahsil during the years 1884-85, 1885-86, and 1886-87 was as follows :—

Tahsil.	Year.		
	1884-85.	1885-86.	1886-87.
Rohtak	24·3	40·0	20·1
Jhajjar	28·1	44·8	13·9
Sampla	28·9	31·9	17·2
Gohana	23·5	32·1	12·9
As shown in the Return ...	24·3	40·0	16·0

The rainfall of 1886-87, though not very small in amount, was badly distributed. The rains ceased early and were succeeded by hot winds. There was practically no winter rain. For the last ten months there has been no rain to speak of. This prolonged drought has led to intense dryness of the atmosphere, and has seriously hampered arboricultural operations. There was a severe storm in May 1886, which resulted in the partial or total destruction of many trees on different roads.

Description of work.—The principal work done during the past three years has been extending and keeping up avenues of trees, planting out plots of land in many villages with hardy trees, and enclosing portions of the Jhajjar *Birs* with a view to forming them into fuel and fodder preserves.

Avenues.—As regards avenues the following detail shows results of operations :—

Locality.	No. of trees planted.			No. of trees died.		
	1884-85.	1885-86.	1886-87.	1884-85.	1885-86.	1886-87.
Jhajjar-Kharkhanda road	1,020	488	2,000	91	28	90
Beri-Bahadurgurh ,, ...	854	288	100	43	20	10
Sampla-Beri ,, ...	720	210	51	50	7	2
Rohtak-Kharkhanda ,, ...	2,118	292	175	62	67	15
Jhajjar-Bahadurgurh ,, ...	249	722	470	65	23	5
Rohtak-Jhajjar ,, ...	110	365	80	427	25	90
Jhajjar-Jehazgurh ,, ...	289	50	...	...	...	...
Jhajjar-Dadri ,, ...	261	20	...	12	...	3
Jhajjar-Salawas ,, ...	90	645	...	2	...	...
Jhajjar-Rewari ,, ...	51	70	100	...	...	...
Jhajjar-Farrukhnagar ,, ...	305	30	...	...	...	...
Customs ,, ...	150	...	50	...	75	100
Rohtak-Gohana ,, ...	650	400	750	261	99	65
Gohana-Panipat ,, ...	250	104	95	250	20	10
Rohtak-Bhiwani ,, ...	358	35	180	19	286	30
Rohtak-Sundarpur ,, ...	35	155	30	103	11	30
Rohtak-Jhind ,, ...	332	12	...	...	13	...
Gohana-Butana ,, ...	220	635	170	34	83	34
Gohana-Hansi ,, ...	750	592	145	150	70	50
Gohana-Alabam ,, ...	550	100	493	350	75	117
Gohana-Kharkanda ,, ...	975	807	422	...	119	80
Rohtak-Beri ,, ...	...	...	450	...	...	100
Delhi-Sirsa ,, ...	...	...	373	...	...	35
Canal cut leading Rohtak Station road ...	108	...	...	296	...	...
Circular Road at Rohtak	378	450	30	...	106	30
Station Road, Rohtak	79	228	297	...	36	13
Total ...	10,902	6,698	6,491	2,215	1,163	909

The following is an abstract showing for each Tahsil the number of trees planted and of those that died:—

Tahsil.	No. of trees planted.			No. of trees died.		
	1884-85.	1885-86.	1886-87.	1884-85.	1885-86.	1886-87.
Rohtak	2,668	1,345	1,930	762	570	308
Jhajjar	1,366	1,532	520	159	130	163
Sampla	3,873	1,408	2,311	260	53	107
Gohana	2,995	2,413	1,730	1,034	410	331
Total ...	10,902	6,698	6,491	2,215	1,163	909
Percentage of success ...	79	82	86	...	...	...

The trees planted were chiefly shisham, farash, nim, seras, pipal, mulberry, kikar, bakyan. Owing to the aridity of the district, the presence of kankar in the sub-soil in many places, abundance of white ants and numerous goat and cattle, tree-planting is a disheartening task in this district. Many if not most of the trees planted out are miserably stunted and deformed. Only where water is abundant, as in the neighbourhood of the canal, do trees attain a proper development.

Plantation of trees in villages.—In 1884, plots of land were planted in many villages with kikar, raunj and ber, principally kikar. The result was reported on in this office No. 568, dated 25th September 1884, a copy of the statement attached to that letter follows:—

1	2	3	4	5	6	7	8			9	10
Name of Tahsil.	Number of villages, roads, &c., on which trees have been planted.	Area planted out. In avenues.	Area planted out. In groves.	Name of proprietor of land.	No. of trees sown and planted out.	Description of trees sown and planted.	Expenditure incurred in plantation of trees.			Supervising agency.	Name of persons who afforded aid in the plantation of trees.
		Miles.	B. B. B.	*Trees planted out on Government land.*			Rs.	A.	P.		
Jhajjar.	34 roads ...	43½	181 5 0	Govt. property...	Sown	Kikar, barberi, ronj, shisham.	89	1	6	Road establishment will supervise trees.	
				Trees planted out on private lands by Zamindars at Government expense.							
	13 villages	1	22 0 0	7 Shamlat Deh—1 Govt. property 5 private lands.	Sown	Kikar, barber, ronj, nim and shisham.	200	0	0	By private arrangement.	Akbar Lambardar, Gurawar, Tota Brahmin, Jawahra, Alahi Buksh.
				Trees planted out without Government aid.							
	27 „	...	67 0 0	10 Shamlat Deh. 17 private lands.	...	Kiker ...	...	...	...	Ditto ...	Modh. Zulfkar Khan, Raja Kulyan Singh, Ram Nath, Sheo Nath, Nowrang Singh, and 22 others.
				Trees planted out by Zamindars on private lands held in common.							
	62 „	...	156 18 13	Shamlat Deh ...	...	Kiker ...	...	...	...	Ditto ...	Karam Khan, Ghulam Nabi Khan, Kuriya and Ballu Lambardars & 12 others.

1	2	3	4	5	6	7	8			9	10
Name of Tahsil.	Number of villages, roads, &c., on which trees have been planted.	Area planted out. In avenues.	Area planted out. In groves.	Name of proprietor of land.	No. of trees sown and planted out.	Description of trees sown and planted.	Expenditure incurred in plantation of trees. Rs.	A.	P.	Supervising agency.	Names of persons who afforded aid in the plantation of trees.
		Miles.	B. B. B.	*Trees planted out on Government land.*							
Sampla.	8 roads...	92	18 0 0	Govt. property...	2,183	Siras, shisham, kikar, nim and farash.	69	6	0	Road establishment.	Hans Ram Zaildar and 4 others.
				Trees planted out on private lands by Zamindars at Government expense.							
	114 villages.	...	337 16 15	Shamlat Deh ...	...	Kikar trees.	138	10	0	By private arrangement.	Laiq Ram, Lo Ram, Amin Lal, Hans Ram and 5 others.
				Trees planted out on Government land.							
Gohana.	16 roads...	18	5 miles ...	Govt. property...	2,450	Shisham, nim, anar, anjir, mango trees, farash, jamowa, peach trees, kikar.	648	13	10	Road establishment.	Tirkha, son of Zaildar of Butana, Nanak, son of Ramdas Zaildar, Jiwan and 21 others.
				Trees planted out on private lands by Zamindars at Government expense.							
	61 villages	...	100 12 0	Shamlat Deh.	...	Kikar, farash, nim, jamowa, bar, amrud, lemon, and barberi.	130	2	0	By private arrangement.	
				Trees planted without Government aid.							
	2 „	10 biga	5 0 0	Dalmir Khan, & Baini.	200	Kikar, shisham, amrud, anar, aru and jaman.	10	0	0	Ditto. ...	Dalmir Khan and Hati Ram, Zaildars.
				Trees planted out on Government lands.							
Gohana.	17 roads...	24½	13 14 0	Govt. property...	528	Farash, nim, dhak, shisham and kikar.	...	...	...	By road establishment.	
				Trees planted out on private land by Zamindars at Government expense.							
	41 villages	...	66 9 6	Shamlat Deh ...	...	Nim, farash, shisham, kikar, sonjana barberi, pipal, siris, bar, gondni.	...	...	...	By private arrangement.	Haidar Lambardar, Dhuman Zaildar, Tota Ram, Zaildar Jawahira and 41 others.

Operations were most successful in Sampla, and best so in Rohtak. I was much struck during my cold weather tour with the result of this experiment. In some villages there are now most promising plantations of young kikar trees. Though small, these plantations will soon be valuable, and are capable of extension, and show that with attention some trees can be reared of a useful kind with little expense. I have directed efforts to be made during the coming monsoon, if the season is favorable, to extend these plantations and to renew those that have failed owing to natural causes or neglect.

Fuel and fodder preserves in Jhajjar Bir.—During 1884-85, parts of the Jhajjar Birs were enclosed with a ditch and bank with a view to being used as fuel and fodder preserves. This enclosure has had a good effect on the growth of grass, and probably has been favorable to the trees. During the last year a plan has been sanctioned for improving the Jhajjar Birs. I am afraid the results will hardly be worth the cost. Owing to the prolonged drought it has not been possible to do much this year, but nurseries are being laid

out, and arrangements have been made to plant out seed of hardy trees and also to put down grass in suitable spots this rainy season. This is a matter, however, pertaining rather to the next report. About 200 acres of the Chhuchakwas Bir were burnt this spring. The larger trees were little injured, but a stack of grass was consumed. For several years no grass has been cut and stacked in these Birs, but there is no demand for it, and the expenditure seems so much money thrown away. The grass is of poor quality, and except with starvation among their cattle in the fair, the zamindars will have nothing to say to it. I think this stacking grass will probably prove a costly failure.

Extension of arboriculture.—The subject of the extension of arboriculture has been for some time under the consideration of the District Board. It has been decided to grant rewards to persons who exert themselves in this cause, and, if possible, to take up some land which appears suitable in the Sampla and Rohtak Tahsils. The following plan of future operations has been decided on, but the prolonged drought of 1886-87 will render it difficult to act up to this plan this year :—

"That 3 miles of a road be planted yearly with trees in each Tahsil. Before the commencement of each official year, each Local Board will select the locality where the trees are to be planted during the year and send proposals to the District Board for sanction. When the proposals of the Local Boards are sanctioned by the District Board, the former will make their own arrangements for planting trees, taking into consideration that the expenditure for planting trees in the first year, and for their maintenance in next three years, will be as follows :—

First year.

Rs. 690 each Tahsil, as per detail given below :—

Pay of 2 malis ... ... Rs. 120 per annum.
Do. of 8 bhistis ... ... „ 480 per annum.
Miscellaneous charges (thawlas, &c.) ... „ 90 per annum = Rs. 690.

Second year.

Rs. 600 each Tahsil, as per detail given below :—

Pay of malis ... ... Rs. 120 per annum.
Do. of 8 bhistis ... ... „ 480 per annum = Rs. 600.

Third year.

Rs. 300 each Tahsil, as follows :—

Pay of 1 mali ... ... Rs. 60 per annum.
Do. of 4 bhistis ... ... „ 240 per annum = Rs. 300.

Fourth year.

Rs. 300 for each Tahsil, as per detail given above."

Groves along main roads.—There are small plots of land along some of the main roads, originally planted as groves. In some of these, the trees have almost all died. Orders have issued for the repair of the trenches surrounding these plots and the planting of hardy trees during the coming rainy season.

Lopping and pruning.—The trees are lopped and pruned twice a year. No pruning or removal of branches from any tree is permitted except under the direct supervision of the jamadar and head malis who are well aware of the importance of avoiding measures which lead to the permanent disfigurement of trees. When the work is finished the branches cut are collected at a convenient place in each Tahsil, and sold by public auction by the Tahsildars, and the proceeds are credited to the District Fund.

Nurseries.—In this District there are seven nursersies for rearing trees, 2 at the Sadr, 2 at Jhajjar, 1 at Sampla, 1 at Bahadurgurh and 1 at Gohana. They are able to supply almost all the trees required for planting out.

Establishment and supervision.—The arboriculture establishment consisted of—

Jamadar @ Rs. 10 per mensem,
Head malis @ Rs. 6 and 7 per mensem,
Malis @ Rs. 5 each per mensem,
Pakhalis @ Rs. 6 each per mensem,

who are supervised by the District Fund Overseer and the Tahsildars. The following is the scale maintained during the three years in each Tahsil :—

Tahsils.	1884-85.			1885-86.			1886-87.		
	Jamadars.	Malis.	Pakhalis.	Jamadars.	Malis.	Pakhalis.	Jamadars.	Malis.	Pakhalis.
Rohtak	1	16	12	1	16	16	1	16	17
Jhajjar	1	9	16	1	9	11	1	9	14
Sampla	1	10	9	1	11	9	1	14	10
Gohana	1	10	6	1	8	7	1	8	7

The charges incurred from the District Fund for establishment and contingencies may be seen from the following table :—

	Establishment.	*Contingent.*	*Total.*
	Rs.	Rs.	Rs.
1884-85 ...	5,530 ...	515 ...	6,050
1885-86 ...	5,435 ...	145 ...	5,580
1886-87 ...	5,911 ...	221 ...	6,132

The increase in the cost of establishment in 1886-87, as compared with that in the previous year, is due principally to the appointment of extra bhistis and their employment for longer periods owing to the insufficient rain-fall of 1886-87.

Receipts.

Financial result.—	1884-85.	1885-86.	1886-87.
	Rs.	Rs.	Rs.
By sale of fruits ...	0 ...	24 ...	17
„ Lopping ...	0 ...	28 ...	12
„ Dead trees ...	91 ...	380 ...	1,129
	91	432	1,158
Expenditure.			
As per detail given above—			
Deficit ...	6,050 ...	5,580 ...	6,132
	5,959	5,148	4,974

The large increase in income in 1886-87 is due principally to the statement mentioned above.

4.—HISSAR DISTRICT.

General remarks.—The instructions received from the Conservator of Forests under cover of Commissioner's Circular, No. 42, dated 6th February 1886, have been carefully attended to in this district, and particular attention has been paid in planting such trees that the leaves thereof can be utilized as fodder for cattle, which is greatly needed in a dry district as this; the trees planted were such as kikar, pipal, shisham, lisora and shahtoot &c.

During the years under report the seasons were generally unfavorable for arboriculture owing to the inadequate rainfall. The arrangement made by Colonel Grey that part of the old Customs' line should be given for cultivation on condition that the rest should be sown with kikar, could not be carried out from want of rain.

Altogether it may be said that arboriculture has not been a success in this district during the last three years: and I see no hope of any advance unless the efforts of the establishment are confined to certain limited areas: and not spread over many miles of road.

Description of work.—Avenues.—The subjoined statement shows the results of trees planted during the years under report :—

Year.	Length in feet.	Trees planted.	Trees died.
1884-85	4,50,737	6,600	350
1885-86	4,50,737	2,752	786
1886-87	5,02,094	6,477	4,430

The increase during 1886-87 against two previous years is due to the addition of the following roads, *viz* :—

Road Hansi to Gohana	10,560	feet.
„ „ to Karnal	5,280	„
„ „ to Barwala	5,280	„
„ „ to Kharar	10,560	„
„ „ to Tosham	10,560	„
Barwala Circular Road	1,500	„
Sirsa to Ellenabad	1,500	„
Johorar to Do.	4,000	„
Total ...	49,240	feet.

The detail of the current year's work is as follows:—

Brought forward from 1885-86		4,50,737
Planted during 1886-87		5,037
Omitted from 1885-86 Statement		49,240
Total ...		5,05,014
Deduct area on which trees did not grow ...		2,920
Total correct area ...		5,02,094

The rains stopped early in 1886-87, and two-thirds of the trees planted, died. It is in my opinion a waste of money to attempt the formation of avenues in this district, except at the head-quarters or at Tahsils. At other places there can be little or no supervision: and trees are planted out only to die. The only means of successfully growing trees in an arid district like Hissar, is by taking up land for nurseries—and devoting all the time and energies of the establishment to a comparatively small area.

Nurseries.—Four small nurseries with an aggregate area of 4 acres and 34 poles were by mistake omitted from last year's statement. The area of nurseries sown during 1886-87 was 30 acres 3 roods and 17 poles, but the result was not very successful as ⅓ of the trees planted out died.

The area at end of 1886-87 is as follows:—

	A.	R.	P.
Area brought forward from 1885-86	22	2	21
Planted during 1886-87	30	3	17
Omitted from 1885-86	4	0	34
Total ...	57	2	32

The following statement shows the trees planted during the year's under report:—

Year.	Area in A. R. P.	Trees planted.	Trees died.
1884-85	14 2 11	2,100	450
1885-86	22 2 21	1,13,262	500
1886-87	57 2 32	11,755	3,876

Gardens and Groves.—The area under this head in the statement for 1884-85 was 52 acres 2 roods 15 poles, but it has increased by 3 roads, *i. e.* one road in Bhiwani and 1 road in Fatehabad as shown in the statement for 1885-86, making in all a total of 53 acres 2 roods 15 poles. The subjoined statement shows the number of trees planted, and of those which have died at the end of each year under report.

Year.	Area in A. R. P.	Trees planted.	Trees died.
1884-85	52 2 15	2,370	100
1885-86	53 1 15	4,297	785
1886-87	53 1 15	2,193	545

The increase of Rs. 665 in the year 1885-86 as compared with the preceding year was mainly due to the making of a new well in the Sirsa garden, and to extensive lopping in the Hissar gardens.

The decrease of Rs. 407 in the year 1886-87 is due to the transfer of the station gardens at Sirsa and Hissar to the Municipalities of these towns and to one of the Hissar gardens being given on contract.

Expenditure.—The following is the detail of expenditure :—

	Rs.
1884-85	4,694
1885-86	4,645
1886-87	2,583

The decrease in the year 1886-87 is due to the transfer of the gardens &c., as above explained, and reduction in establishment.

Income.—The detail of income realized during the three years under report is as follows :—

Particulars.	Total.	Grand total.
	Rs.	
Gardens	332	
Nurseries	16	
Avenues and Groves	46	
		394
Gardens	803	
Nurseries	27	
Avenues and Groves	229	
		1,059
Gardens	...	
Nurseries	34	
Avenues and Groves	618	
		652

5.—KARNAL DISTRICT.

General remarks.—Rainfall.—The following table will show that the years 1886-87 was very unfavourable as regards the rainfall, the total amount being very deficient as compared with that of the previous two years, and in two Tahsils with the average of the five years ending 1885-86 :—

Tahsil.	1886-87.	1885-86.	1884-85.	Average of past 5 years.
Karnal	29·9	30·4	44·8	28·5
Panipat	20·7	24·5	27·6	22·1
Kaithal	8·0	24·4	20·0	18·5

But considering the adverse nature of the year, it is satisfactory to be able to state that the conseqences were not quite so bad as could have been expected. On the other hand, there has been a marked improvement over at least the previous two years—the percentage of loss during the year under report being only ·9 as against 11· and 7· in 1884-85 and 1885-86 respectively.

There has, however, been a little decrease in the total number of trees.

There are now altogether 29,193 trees in this District. In the previous year there were 29,839, and in the year preceding that the number was 33,471.

Description of work.—The following statement will show the results of the past year in comparison with those of the previous two years :—

Statement showing the Arboriculture operations of the past three years.

1	2	3	4	5	6
Tahsil	Sub-heads of Arboriculture.	Total number of trees at the beginning of the year 1884-85.	Total number of trees at the beginning of the year 1885-86.	Total number of trees at the beginning of the year 1886-87.	Total number of trees at the end of the year 1886-87.
KARNAL.	Avenues	14,154	13,848	13,720	13,614
	Groves	1,477	1,455	1,455	1,455
	Nurseries	4,308	2,465	2,214	1,674
	Total ...	19,939	17,768	17,389	16,743
PANIPAT.	Avenues	7,072	7,072	6,472	6,472
	Groves	203	203	203	203
	Nurseries	4,000	4,000	1,500	1,500
	Total ...	11,275	11,275	8,175	8,175
KAITHAL.	Avenues	2,618	2,609	2,606	2,206
	Groves	184	184	184	184
	Nurseries	1,865	1,635	1,485	1,485
	Total ...	4,667	4,428	4,275	4,275
	GRAND TOTAL ...	35,881	33,471	29,839	29,193

Cause of improvement.—The reason of these so far satisfactory results is that no new works were undertaken on account of the rather unsatisfactory state of the arboricultural operations in this District, but a greater care and attention devoted to the maintenance and protection of trees already planted.

Avenues.—The avenues in this District are mostly *shisham, sirus* and *jamoa* (*kikar* excepted). They are, when young, properly fenced by mud wall or wicker crates.

Lopping.—Lopping, as a rule, is scarcely allowed at all except where it is absolutely necessary (*e. g.* in the case of pendant branches) or otherwise distinctly advantageous.

But when done, it is done with great care, and, so far as can be, in accordance with suggestions of the Conservator of Forests. A dozen handsaws were procured from Calcutta for pruning, and the use of any other instrument is forbidden by standing order; but it is not quite easy to get trained hands in a backward district like Karnal, where " lopping"—(though the people here know nothing short of *mutilating*)—is considered only as means " for preventing the tree from getting large and thus becoming subject to the influence of strong winds."

Introduction of improved system of planting.—An improved system is being pursued for planting on pre-arranged lines from fixed centres; and in places where the soil is unfavourable to roadside avenues, groves will be formed as suggested by the Commissioner. Arrangements have been made to get some kikar trees planted during the current year.

Detail of avennes.—At present there are avenues along 22 roads in this District containing in all 22,692 trees as under:—

Tahsil	Karnal	... 13,614
Do.	Paniput	... 6,472
Do.	Kaithal	... 2,606

These trees, in all cases, are planted in single rows, and generally 22 to 25 feet apart; (on some roads, however, where, for instance, the trees are more shady, the distance is kept even up to 40 feet).

The following is a detailed account of each road enumerated in statement of Avenues:—

Karnal and Kaithal road.—There are altogether 3,198 trees on the 7 miles of this road planted out, of which 2,585 trees are on the portion lying in the Karnal Tahsil, and 613 on that lying in Kaithal (proceeding in each case from the Tahsil head-quarters).

These trees are planted 22 feet apart. They are in a fair condition, but the work is carried on under some difficulties as the water is at a great distance in that part of the district and the soil generally *reh* and *kallar*.

801 trees died on this road during the past three years, of which 605 have been replanted, leaving 196 blanks still existing. Of these 605, 150 blanks were filled up during the year 1886-87, while the loss in that year was only 50.

1,525 trees are receiving maintenance on this road; the rest are all grown up.

Karnal and Mirat road.—Two miles of this road are planted with trees. They are generally 25 feet apart, being in all 1,104, and they are for the most part in a fair condition.

These trees have now all reached maturity, and there was no loss during the year under report.

Karnal and Saharunpur road.—There are 640 trees on this road planted over a length of 2 miles. They are all grown up trees requiring no maintenance. The soil is similar to that of the Mirat road just referred to (*i.e.* generally good), both of them lying along the course of the Jumna.

Karnal and Hansi road.—1,471 trees are planted over 4¼ miles of this road, which is 18¾ miles long (in this District). More than half of these trees are full grown, and the plants are generally thriving on a favorable soil.

512 blanks were filled up during the past three years, while the loss was only 429. During the year under report 40 trees died, and 100 replanted.

The number of trees maintained during the year was 780.

Karnal and Jagadhari road.—17 miles of this road lie within the District, of which 5¼ miles are planted. All the trees, 1.625, have now reached maturity, and require no maintenance. They are generally 30 feet apart.

135 blanks (of previous years) are still left unfilled on this road, and will be attended to in due course.

Karnal and Ferozepore road.—Of the total length (21 miles) of this road, two miles only are planted with trees. They are 22 feet apart, numbering in all 1,111.

370 trees died during the past three years, and 347 replanted. During the year 1886-87, the number of blanks filled up was 80, and the number of trees died, 75.

About ⅔ of the total number are grown-up trees, and the remaining ⅓ receiving maintenance. The plants are in a thriving condition and will fenced.

Indri and Thanesar road.—The trees on this road are all grown up and form a good shady avenue. They are 620 in number.

Circular road, Karnal.—The whole of this road (¾ miles) is planted out. There were 893 trees on this road in the beginning of 1884-85, of which 386 were subsequently cut down because they were so contiguous to the town walls as to afford facilities for thieves &c., to enter the city by means of scaling.

Now there are 507 trees on this road, of which 90 are receiving maintenance. These are in a very satisfactory condition, and 21 feet apart.

Station roads.—These roads contain 3,331 tress planted over a total length of 6¾ miles (out of 7½ miles), being 22 feet apart. Of these, 1,382 trees are receiving maintenance, the rest being full grown. They are mostly *shisham* tress.

753 trees died during the past three years, (95 being in the year 1886-87), and were all replanted. In addition thereto, 152 more blanks existing from the previous years were filled up: 115 during the year 1886-87, and 37 during the previous year. These trees are all now in a very satisfactory condition.

Grand Trunk road.—620 trees stand over the total length (½ miles) lying within the Civil Station limits. Of these 200 received maintenance in the year 1884-85; but now they have all reached maturity. They are generally 25 feet apart.

Panipat and Sanauli road.—6 miles of this road are planted with 2,289 trees, of which 625 are receiving maintenance. These are now in a fair condition, there being no loss during the year 1886-87.

There were 2,589 trees on this road at the beginning of 1884-85.

Panipat and Barsat road.—Half a mile of this road is planted with 146 trees, which being full grown require no maintenance.

Panipat and Rohtak road.—Half a mile of this road is planted out with trees. These are altogether 200, and are all grown up, requiring no maintenance.

Panipat-Kothi towards River escape.—This road is completely planted out with 952 *shisham* and mulberry trees, which no longer require maintenance having nearly reached maturity. They are generally 20 feet apart.

Panipat tahsil building to the town.—There are 120 trees on this road which is completely planted out. They do not require maintenance.

Chhajpur and Seva road.—This road was completely planted out in 1882-83. At the beginning the experiment seemed to fail chiefly owing to excessive rains in that year, but now they are all in a very thriving condition—numbering 2,042 in all.

There was no loss during the year 1886-87—they are all being carefully maintained.

Road branching from Grand Trunk road to Kothi-Panipat.—The whole length of this road (1¼ miles) is planted out with mostly *shisham* trees—723 in all.

406 trees were maintained during the past year, and they all now appear to be in a very fair condition. There was no loss during the year 1886-87.

Kaithal and Jhindh road.—There are 1,227 trees on the three miles of this road (28½ miles long) planted out. No loss occurred during the year 1886-87; but 285 trees were lost during the previous two years which were all re-planted.

All these trees continue to be in a fair condition and well attended to—910 still receiving maintenance every year.

Rajanand and Asandh road.—There are 401 trees on the portion planted out. They are all receiving maintenance and making a statisfactory progress. No trees were lost during the past year, but there occurred 35 blanks during the year previous, which were duly filled up.

Kaithal and Pehowa road.—Only ¼ mile of this road is planted out. There are 303 trees thereon, of which 175 are receiving maintenance. They are all thriving satisfactorily, and will, it is hoped, reach maturity in a short time.

Kaithal and Thanesar road.—There are only 62 trees on the ¼ mile of this road planted out. They are all full grown; but the avenue is not quite shady—the intervening distances being very great.

Number.

Groves.—There are altogether 12 groves in this District, of which 8 (containing 1,455 trees) are in the Karnal tahsil, 2 (containing 203 trees) in Panipat, and 2 (containing 184) in Kaithal.

Description.—These groves contain in all 1,842 trees (as in the previous year) of various kinds, all in a satisfactory condition. Many of these trees are very large and present a good shade. They are all full grown trees and no longer require any maintenance.

Situation.—All the groves in the Karnal tahsil are along the Grand Trunk road. They are at three different places, *viz* :—

1. Gharaunda,
2. Karnal,
3. Butana,

which are ten miles distant from each other.

The groves in the Panipat tahsil are also along the Grand Trunk road. They are at the two encamping-grounds in that tahsil, namely, Sambalka and Panipat.

The Kaithal groves are one along the Bidkidar Tank channel, and the other at the Pundri rest-house.

Nurseries.—There are three nurseries in this District, *viz* : one at the head-quarter of each tahsil. Over 3,000 plants were removed during the past three years from these nurseries (540 in 1886-87) for transplanting on road-sides, and there are at present 4,185 more seedlings fit for transplanting, besides 174 big trees, and about 200 fruit and 100 flower trees.

No seed was sown in the place of plants taken out from these nurseries, as the existing number of seedlings is more than sufficient for the possible requirements of the District for some time to come. But in future the stock of plants will, it is hoped, be replenished in due course, as the system of arboriculture operations in this District is brought to a perfection.

General account of nurseries.—The nursery at Karnal contains 1,200 seedlings (beside 174 big trees), 200 fruit and 100 flower trees. The fruit trees are chiefly mangoes, peaches, Indian figs, lime, oranges, pears, pomegranates &c. It has supplied 2,634 seedlings for planting out during the past three years, of which 540 were during the year 1886-87, 251 in 1885-86 and 1,843 in 1884-85.

The Panipat nursery contains 1,500 seedlings.

The nursery at Kaithal contains 1,485 plants, and has supplied 380 for transplanting during the previous two years (*viz.* 150 in 1885-86 and 230 in 1884-85).

Seed.—The vegetable and flower seeds are supplied by the Agri-Horticultural gardens Committee at Lahore, to which the District Board pays a yearly contribution of Rs. 120,

but for future, I think it may perhaps be better, in some respects, to obtain the supply for this District from Saharanpur.

Income and Expenditure.—There is little income to be expected, as the trees are nearly all of them (excepting a small number in the Karnal nursery) ornamental, and intended to furnish shade along the roads. There are no timber plantations in the District, and no lopping is allowed off the road-side or other trees, as stated above. The only legitimate income therefore, besides that derived from the sale of fruit, is from trees blown down by the wind and the like.

The subjoined table of the financial results will show that the income of the year 1886-87 does not differ much from that of the year preceding it (*i. e.* Rs. 75-8 as against Rs. 80,) but it has fallen by more than Rs. 50 as compared with the figures of the year 1884-85.

Receipts.		*Charges.*	
	Rs.		Rs.
1886-87	75	1886-87	3,285
1885 86	80	1885-86	4,269
1884-85	127	1884-85	4,857

The difference lies in the reciepts from "fruit trees," and hardly calls for any explanation beyond that, that it was simply accidental.

Efforts are, however, being made to reduce the charges within the narrowest limits, so far, of course, as is compatible with the due development and protection of arboriculture in this District.

Cause of decrease in expenditure.—The expenditure has kept steadily decreasing during the last four years. In 1883-84 the total amount was so great as Rs. 5,728-14-7, but it has now come down to Rs. 3,285-0-11 (*i.e.* only a little more than half). In other words the year 1886-87 shows a saving in the total amount of outlay by about Rs. 2,000 as compared with the average of the preceding five years, and by about Rs. 1,000 as compared with the item for 1885-86.

This remarkable fall in expenditure is so far satisfactory when it is considered that the state of arboriculture operations in this District has not at all suffered thereby; but has, on the other hand, been improving so far as the maintenance and protection of the existing plantations are concerned.

Protection of trees, &c.—The members of the Local Boards in this District are required to arrange for protection of trees within their beats (*i. e.* extending for five *kos* on each side of the village residence of the member), and the responsibility of Zaildars and Lambardars is from time to time enforced. The Tahsildars and members have further been enjoined by the Deputy Commissioner (who is *ex-officio* President of the District Board) for future, to draw up and submit plans for bringing rain water along the side-drains and bare spaces by District roads, so soon as rain falls and sowing belts of kikar trees.

By this process it is hoped to bring about a perfect arrangement for maintenance and protection of trees already planted, and even to set in new trees, chiefly of kikar, where possible, without incurring at the same time, the enormous charges of bhistis' pay &c.

Municipal Committee.—Hitherto the Municipal Committees in this District have done very little towards the development of arboriculture.

The Panipat Municipal Committee (the largest in this District, with an income of about Rs. 23,000) does not spend at all under this head.

The Karnal Municipality (income Rs. 22,000) spends Rs. 200 a year. There are altogether 500 trees within the Municipal limits (originally planted by the District Board) of which 90 are receiving maintenance. These have already been dealt with above under the head Avenues—the Karnal Circular road.

The Kaithal Municipal Budget expenditure under this head is Rs. 150, and its annual income about Rs. 14,000.

But to do these Municipalities justice, it may at the same time be mentioned, that the scene of the work of these Municipalities is not so large as to admit of any considerable amount of operations, although no doubt they (especially the Panipat Municipality) could do more in this direction if they choose.

Arboriculture by village committees and individuals.—There are some groves here and there in certain villages, but on the whole private enterprise is very little to be expected in a backward District like Karnal. Endeavours are being made to impress on the individuals as well as the village committees the desirability of planting groves and the value of trees for fodder purposes; but no practical results have yet been produced.

The circumstances (including those relating to Government lands) were explained in Deputy Commissioner's letter No. 221, dated 11th August 1886, to address of Commissioner

and Superintendent, Delhi Division. But due attention will, of course, be devoted to introduce the Hissar system, and get trees sown on uncultivated lands in this District.

The next detailed report on arboriculture will, it is hoped, contain more useful information on this subject.

Note by Deputy Commissioner.

I hope during the current year to take up the matter of tree-planting, which is much in need of the Deputy Commissioner's personal attention, in this District.

But it is difficult to pay attention to such important operations until a duly paid Secretary is available to relieve the Deputy Commissioner of the mass of routine work in connection with Local Funds which at present falls on him.

6.—UMBALLA DISTRICT.

General remarks.—The average rainfall of the past three years is as follows :—

1884-85	...	...	48.4
1885-86	...	...	36.0
1886-86	...	...	38.4

There has been no peculiar event during the period affecting arboriculture.

Description of work.—The total length of roads in the district at the beginning of 1884-85 was 491½ miles, and at the end of 1886-87 it was 525½ miles. The difference is due to transfer of Shabad and Jagadhri road from Provincial Public Works Department to District Board. At the beginning of 1884-85, the length of single lines stocked with trees or established plants was 11,25,684 feet, and at the end of 1886-87, the length of single lines stocked with the trees was 12,93,331 feet, or a difference of 1,67,647 feet, of which 1,26,700 feet is on account of addition of avenues on Shahabad and Jagadhri road; 31,210 feet is on account of miscalculation in the statements prior to 1884-85, and the balance 9,737 feet is the progress made during the past three years on Mustafabad Railway Station road.

	No. of trees planted.	*No. of trees died &c.,*	*Road feet covered by new established trees.*
1884-85 ...	...	...	...
1885-86 ...	838	45	9,497
1886-87 ...	45	25	240
Total	883	70	9,737

12,169 trees were planted to fill up blanks on roads. Thus the total number of trees planted was 13,052, of this 2,233 failed. The percentage of successful trees is 82·3. 2,954 matured trees of avenues have died during the past three years.

At the beginning of 1884-85, there was no land under nurseries, but in 1886-87 an area of 11 rood 15 poles was set apart for this purpose, of which 9 roods 39 poles were brought under cultivation; the species of trees planted thereon are, shisham, siris, tun, nim, tut, pilkhan, jaman and pipal. The plants on the area of 9 roods 39 poles are available for transplantation.

Income.—The income under the different minor heads for the last three years was as follows :—

	Ornamental garden.	*Nurseries.*	*Avenues and groves.*	*Total.*
	Rs.		Rs.	Rs.
1884-85 ...	...	...	1,699	1,699
1885-86 ...	9	...	1,451	1,460
1886-87 ...	117	...	3,369	3,486
Total Rs. ...	126	...	6,519	6,645

Expenditure.—The expenditure under the corresponding heads for the last three years is as detailed below :—

	Ornamental garden.	*Nurseries.*	*Avenues and groves*	*Total.*
	Rs.		Rs.	Rs.
1884-85 ...	1,260	...	2,043	3,303
1885-86 ...	761	...	2,163	2,924
1886-87 ...	1,142	...	2,299	3,441
Total Rs. ...	3,163	...	6,505	9,668

Financial results.—The financial result of the Station garden is very poor. Great attention is being paid to make the garden a self-supporting one if not a source of income to the District Fund, but for want of sufficient water for irrigating purposes, this result cannot be obtained.

The income and expenditure under head avenue are about equal, but it is hoped that under the supervision of a paid Secretary to District Board, the income will rise.

SIMLA DISTRICT.

Arboriculture operations in this District are so small that no report can be prepared regarding them.

Extract from the Annual Report of the Simla Municipality, 1886-87.

Orchards.—The work performed during the past year has been of the usual nature and includes—

(1) Maintenance.
(2) Small extensions.
(3) Propagation, sale and distribution of fruit trees.
(4) Vegetable culture.

The number of permanent trees has been increased from 5,453 to 5,800, and the area from 50 to 52 acres.

The site called Cherot proving too cold for the pear tress planted on it, they were removed last winter to warmer positions, the reduced area caused by their removal having been allowed for in computing the area.

The site will, however, be retained for indigenous trees or small fruits for which its position is suited.

The trees were somewhat damaged and their growth checked by hail in April 1886, but the general growth is satisfactory.

Three statements are submitted, showing—

(1) The number of trees planted in permanent places to the end of March 1887.
(2) Details of nursery stock at the same date.
(3) Details of fruit trees distributed.

The distribution of fruit trees, which forms part of the Orchard scheme, was commenced during the past season. In all, 55 applicants appeared and the names of the principal recipients are given in the statement submitted.

The majority of the trees have been given to people residing within a radius of 20 miles of Simla.

The propagation of these trees has hitherto depended a good deal upon the Superintendent, but the head men at Annandale and Mahasu are now capable of grafting and budding, and others will be afforded opportunities for learning. One of the difficulties regarding this is, that so few native malis are able to read and write, and cannot therefore number or name the trees they cultivate.

The probable stock for next winter's distribution, replacing failures, &c., is upward of Rs. 2,000.

A report regarding potatoe cultivation is subjoined.

The receipts by sale of produce were—

Fruit trees ...	...	Rs.	120	4 0
Potatoes ...	...	„	82	7 0
Other vegetables	...	„	94	2 6
Total Rupees	...		296	13 6

The further extension of vegetable culture has been under consideration, but without some initial outlay in the preparation of the ground, collection of manure, and, above all, storage of water, there is no prospect of a continuous supply of vegetables being maintained.

The extension of the cultivation of lucerne, rhubarb, seakale and asparagus is desirable, and certain to be remunerative.

The expenditure during the year was—

Share of Superintendent's salary	...	Rs.	1,500	0 0
Native establishment ...	...	„	1,921	6 9
Contingencies ...	...	„	360	14 9
Completing rest-house verandah	...	„	217	1 0
Total Rupees	...		3,999	6 6

The Expenditure and Receipts from the commencement of the scheme to 31st March last is as follows :—

Total expenditure	Rs.	16,341	8	0
Receipts.				
Government of India grant ...	Rs.	5,000	0	0
Produce 1884-85 ...	„	131	8	9
Do. 1885-86 ...	„	162	4	9
Refund 1885-86 ...	„	268	1	0
Grant 1885-86 ...	„	1,500	0	0
Do. 1886-87 ...	„	1,500	0	0
Produce 1886-87 ...	„	296	13	6
Total Rupees ...		8,858	12	0

Leaving the net cost to the Municipal Committee, without interest, Rs. 7,402-12-0.

Statement showing number and varieties of Fruit trees planted in permanent places to end of March 1887.

	Apples.	Pears.	Peaches.	Apricots.	English Plums.	English Cherries.	Figs.	Various small fruits.	Totals.
Saungri	426	165	208	100	83	63	...	...	1,045
Chowri	56	45	...	20	12	73	...	30	236
Chowki	112	25	1,581	70	59	25	112	16	2,000
Cherot	...	...	...	...	...	...	...	35	35
Palang	522	534	...	390	...	...	...	4	1,446
Sogh	260	...	...	...	...	...	...	...	260
Kumali	...	...	106	...	...	...	...	...	106
Garaich	162	131	...	215	...	...	60	...	568
Road sides	...	...	...	...	...	...	...	100	100
Total ...	1,538	900	1,895	795	154	161	172	185	5,800

Surplus stock of Fruit trees and Fruit tree stocks in Nurseries on 31st March 1887.

Grafts or Varieties not requiring Grafting.				Stocks for Grafting.			
Varieties.	Catchment Area.	Annandale.	Total.	Varieties.	Catchment Area.	Annandale.	Total.
Grafted Apples ...	646	578	1,224	Apple	1,071	780	1,851
„ Pears ...	...	121	121				
„ Peaches ...	26	...	26	Pear	156	1,200	1,356
„ Apricots ...	41	25	66				
„ Cherries ...	128	390	518	Plum	154	165	319
„ Plums ...	...	30	30				
Kashmir Quinces ...	150	...	150	Cherry	410	226	636
Figs ...	43	177	220	Almond	...	455	455
Total ...	1,034	1,321	2,355	Total ...	1,791	2,826	4,617

Fruit trees distributed gratis during 1886-87.

Names.	No. of trees.	Names.	No. of trees.	
Kaku	12	Brought forward	409	
Kishendutt	12	Nahin Singh	24	
Lalkoo	12	Ditoo	28	
Mandrai	20	Sahib Singh	30	
Rana of Bussahir	75	Ranbir Singh	26	
Jhoper	12	Bhaghat Rana	85	
tma	12	Lutf Hossain	25	No. of Applicants 55.
Maniah	12	Sharfudin	30	
Oodab Singh	12	Rifle Range	...	
uchiram	12	Sanjoli	16	
Thakuria 1	16	Col. Crookshank	23	
Lachmi Singh	15	Thakuria mason	20	
Kishen Lall	45	30 other applicants receiving each less than 12 trees in all.	155	
yed Abdulla	50			
Dabee Ram	92			
Carried forward	409	Total ...	871	

Abstract.

Apples	667	Figs	18
Apricots	55	Pears	31
Peaches	14	Almonds	14
Cherries	69	Plums	3
	805	+	66 = 871

Station Tree-planting, 1886-87.—A statement is below submitted showing :—

I.—The number of trees and shrubs planted about the station.

II.—Varieties and weight of seed sown in the station and in the nurseries.

III.—Varieties and numbers of stock in the nurseries.

IV.—A list of newly introduced shrubs, and coniferous trees.

In the station 4,862 plants of all descriptions were put down ; 2,000 cuttings planted and 22 maunds of seeds sown.

In the nurseries 12 maunds of seeds were sown, failures and removals replaced, and one year old seedlings transplanted.

The stock now in the nurseries, which has been counted, is 18,050, but, with the exception of the horse-chestnuts, none of the plants raised from last winter's sowings have been calculated. A very large quantity of seed has, however, germinated well and the plants are progressing.

In addition to the work, in and about Simla, 35 maunds of acorns of *Quercus dilatata* were sown on the Catchment Area at a cost of Rs. 70, which has been debited to the station grant.

Of the newly introduced trees and shrubs 22 species were raised from seed received from the Lawson Seed and Nursery Company, Edinburgh, 6 species from Lahore and 1 from Abbottabad.

The Establishment was employed as follows :—

Planting and sowing in the station and nurseries.

Maintenance of trees already planted.

Extending nursery plots.

Collecting and cleaning seed.

The results so far in the station are, that where the plants are protected they are doing well, of which the Ripon Hospital grounds are a fair example.

A large number of uncultivated shrubs have been planted in the Combermere Ravine, with a view to getting it covered with any thing which will hold the soil together and prevent erosion and landslips.

The plants are doing better here than in the more public parts of the station.

The Blue Gums planted near the Secretariat Offices suffer somewhat from the snow; but have been planted thickly and will support each other when larger. These are doing well, and the same may be said of the cuttings and trees planted near the new Katchary.

The expenditure during the year amounted to Rs. 991-10-6.

List of trees and shrubs planted about the Station during the year 1886-87.

Trees.		
Populas Ciliatœ	600	
Eucalyptus Globulus	282	
Cedrus Deodara	60	
Robinia Pseudo-accacia	50	
Various other species of trees	30	
		1,022
Shrubs.		
Broom, Yellow	220	
Do. White	200	
Furze	90	
Spiræa Lindleyana	100	
Wild Indigo	126	
Uncultivated varieties removed from the Forests	1,584	
Trees and Shrubs and other perennial plants, Ripon Hospital ...	1,040	
Dahlias	500	
		3,840
Trees given away.		
To United Service Club, deodars	100	
„ New Viceregal grounds „	100	
„ Native gentlemen „	22	
„ „ „ horse-chestnuts...	10	232
Poplar and Willow cuttings	...	2,000

List of Seeds sown.

Station.	Weight in seers.	Total.
Quercus dilatata	800	
„ incana	64	
Horse-Chestnuts	15	
Deodar	11	
Other varieties	18	
		908
Nurseries.		
Quercus dilatata	68	
Deodar	82	
Abies Webbiana	12	
Quercus incana	120	
Wild Cherry	23	
Other varieties	29	
Horse-Chestnuts	172	506
Total ...	...	1,414
1,414 seers = 35 maunds 14 seers.		
Walnuts not weighed.	No.	
Number of nuts	4,800	

Nursery Stock.

In the open ground.		No.	No.
Deodars	transplanted	6,000	
Quercus incana	„	1,300	
„ Semicarpifolio	„	23	
Rhododendron Arboreum	„	1,100	
Abies Webbiana	„	24	
Walnuts	„	1,156	
Horse-Chestnuts	„	160	
Hazel nuts, common hill variety	„	37	
Horse-Chestnuts	not transplated	4,000	
			13,800
Plants in Pots.			
Deodar		340	
Capressus torulosa		1,000	
Pinus longifolia		400	
„ Gerardiana		160	
Abies Webbiana		240	
Cryptomerea japonica		380	
Abies Smithiana		180	
Quercus incana		200	
Furze, Ulex Europœa		240	
Broom, Yellow		300	
Laburnum		80	
Bamboos		60	
Broom, White		230	
Miscellaneous varieties		440	4,250
	Total ...	...	18,050

List of new introductions.

1. Biota Orientates.
2. Capressus macrocarpa.
3. „ Lusitanicus.
4. „ Majestica.
5. Juniperus Virginiana.
6. Picea Balsamea.
7. „ Pinsapo.
8. Pinus insignis.
9. „ Austriaca.
10. „ Laricio.
11. „ Maritima.
12. „ Montana.
13. „ Sylvestris.
14. Thuja occidenlates.
15. Wellingtonia Gigantia.
16. Berberis fuchsioides.
17. Calycanthus precox.
18. „ „ rosea.
19. Ceanothus Africanus.
20. „ Americanus.
21. Cytisus Alpinus.
22. Eleagnus Augustifolius.
23. Capressus funebris.
24. „ horizontalis.
25. „ Sempervirens.
26. „ „ pendula veva.
27. „ Lawsoniana.
28. Platanus Orientalis.
29. Phuja Partarica.

JULLUNDUR DIVISION.

Remarks by Commissioner.

Remarks.—The rainfall in the several Districts during the past four years is shown in the table below, having been extracted at the cost of some labour from the monthly reports submitted to the Financial Commissioner and published in the *Punjab Gazette*, as the figures in the District statements accompanying, and those exhibited in the printed returns on arboriculture for past years, have been in most cases found to be unreliable.

	1883-84.	1884-85.	1885 86.	1886-87.
Kangra	65·42	65·2	65·42	56·9
Hoshiarpur	36·35	36·3	36·35	40·3
Jullundur	28·70	26·5	28·70	26·5
Ludhiana	25·99	27·8	20·57	21·7
Ferozepore	19·70	12·9	19·70	14·9

The rainfall has nowhere in the Division been so much above or below the average as to effect operations in arboriculture to any very material degree. The Deputy Commissioner of Jullundur, however, reports (although, taking the whole year, it was not below the average) that "in consequence of little or no rainfall in the cold weather, the District Board had to employ a larger watering establishment for road-side trees." In Ferozepore, new plantings were to some extent affected, as about 34 per cent. of young plants withered on tracts where (particularly in the Muktsar tahsil) canal water could not reach them.

The total length of roads in the Division on which avenues exist or are in course of being planted is 11,360,800 feet, and the length of single lines of trees or established plants on these roads, at the end of the year, was 7,644,800.

The work done during the last three years in the several Districts of this Division, taken collectively, may be seen from the following table :—

	1884-85.	1885-86.	1886-87.
Length in feet of single lines stocked with trees or established plants at the beginning of the year. ...	10,069,441	9,575,533	9,944,950
Length in feet of single lines planted during the year. ...	420,175	959,322	458,050
Total ...	10,489,616	10,534,855	10,403,000
Length in feet of single lines on which cultivation has failed or on which trees or established plants have been destroyed or felled. ...	914,083	693,053	146,613
Length in feet of single lines stocked with trees or established plants at the end of the year. ...	9,575,533	9,841,802	10,256,387

The difference of 103,148 feet between the total length of single line of avenues planted up to the end of 1885-86, as shown in the table above (*viz.* 9,841,802 feet) and the total at the beginning of 1886-87 (*viz.* 9,944,950 feet) is thus accounted for. (1) The road from Jullundur to Kartarpur and thence to Kapurthala, on which the single line of trees covers a length of 105,600 feet, was formerly under the charge of the Executive Engineer, Public Works Department, Provincial Division, and was consequently not included in previous years returns. The road has however been transferred since the close of 1885-86, under the orders of Government, to the District Board. (2) The figures for the Hamirpur tahsil, of the Kangra District, were not correctly given in the statement rendered last year, while those in the return for 1886-87 were entered after careful measurements had been made: this necessitated alterations, reducing the total length of single lines in the District (at the end of the year 1885-86) from 3,107,568 (*vide* column 5 of printed statement for that year) to 3,105,116 feet.

FEROZEPORE DISTRICT.

Statement of avenues.—In the Ferozepore District statement it is shown that cultivation had either failed or that trees or established plants had been destroyed or felled on a total len th of no less than 1,379,920 feet. The entry is obviously incorrect, as the plantings of the yer, added to the total length of single line at its beginning, give the total at the end of March last as exhibited in column 5 of the statement. Moreover, the Secretary to the District Board in his report to the Deputy Commissioner, explains that only 20 per cent. of the trees planted failed. On referring to the printed returns of previous years for this District, I find that column 4 has been invariably left blank ; he entry made in the statement submitted by the Deputy Commissioner having been ignored. Yet this can scarcely be correct, as there can be no doubt that many trees were cut or blown down or destroyed, and that numerous plantings must have failed. The only conclusion to be drawn is that the entry in column 2 must be taken to represent the number of feet on which plants have actually taken successfully ; while the entry in column 4 probably shows the number of feet on which plants have failed or been removed since the avenues were first started on the total length of 3,863,640 feet of road-way !

Further remarks in regard to road-side planting in the several Districts of the Division.—The work done in the way of planting has been very satisfactory in the Kangrá, Jullundur and Ferozepore Districts. Gaps in existing avenues appear to be regularly filled in as they occur, and a large number of trees have been planted in these Districts each year. Owing to the difficulty of watering the plants in the Kangra District and the paucity of funds at the disposal of the District Board, a very large proportion of trees planted die annually—more than half or about 55 per cent. of the number planted within the last three years have died.

In the Hamirpur tahsil, the plantings on only 18,000 out of 57,000 feet of single line were successful, and in that of Plach on but 8,000 out of 37,000 feet. In regard to the work done in the Jullundur and Ludhiana Districts, details are given in the remarks column of the statements and need not be here repeated. In Jullundur, on the road from Rahon to Phillour "about 75 per cent." of the trees planted in 1886-87 are reported to " have died out in consequence of neglect in watering them." This speaks very badly for the supervising staff. Of the work in the rest of the District, however, the report speaks favorably. The Deputy Commissioner of Ludhiana writes very disparagingly of the progress in arboricultural operations since the District and Local Boards have had the work under their control, and I need only invite attention to his report, in which he lays bare a deplorable state of affairs under the present management, and I would commend to notice the suggestions contained in para 8. In para 12 of his report, the Deputy Commissioner of Hoshiarpur gives a table showing the number of trees planted to fill in gaps in existing avenues, the number which have failed and the number which have taken successfully ; and I need hardly add more than that the results are highly satisfactory ; seeing that only 2·15 per cent. of the entire number of trees planted during the last two years had failed up to the close of March last. The Secretary to the District Board, Ferozepore, reports that 139,712 trees were planted on road-side avenues during 1886-87, of which some 20 per cent. died : the number planted in 1885-86 was 57,248, but it is not stated what proportion of this number died.

Description or species of trees planted.—The description of trees planted in the several Districts is the same as heretofore reported, and it is needless to repeat what is fully detailed in column 6 of the District statements. In Ferozepore, however, great pains were taken by Mr. O'Brien, while he was Deputy Commissioner of the District, to cultivate the date palm and mangoe ; seeds of the former having been obtained from the Persian Gulf as well as from Mooltan and Attari. The seeds have germinated and the young plants are said to be flourishing. Mangoe seeds were extensively sown too by Mr. O'Brien, and though many of the young plants are reported to have suffered from frost during last winter, the majority are progressing very favorably. A full account of the experiments is given in Colonel Birch's letter No. 241 of 20th June last, which accompanies.

Groves.—The total area under groves in this Division at the end of the year 1886-87 was 763½ acres ; being five acres less than the area shown in the statements for the year previous. Only in the Jullundur and Ferozepore Districts do the figures differ from those of 1885-86. In that year the area under groves in the former District was 206½ acres, while the return for 1886-87 shows only 173½ acres, or 33 acres less. In Ferozepore, on the other hand, the figures for the former year were 409½ acres and those for the latter 427½ acres, or 28 acres more.

Jullundur District.—The falling-off in Jullundur is due to the fact that " the area of two groves, *viz* : Jania and Nirajwala, in the Nakodar tahsil, was washed away by the river during the past year, and that of Mandi and Kassu, in the same tahsil, in 1884-85." Thus the number of plantations on the banks of the Sutlej has been reduced from 23 in 1884-85 to 20 at the close of 1886-87. The Deputy Commissioner also reports that " the trees of the plantation at Lisarah in the Phillour tahsil were sold last year for Rs. 1,805, and the area amounting to 31 acres will be sown with trees in the present rainy reason."

Ferozepore District.—In the Ferozepore District the increase of 28 acres in the area under groves is reported to have been newly planted: in the year previous too, a considerable area was planted, *viz.* 61½ acres. A very much larger number of trees was, however, put down during 1886-87, *viz.* about 63,000, as against 22,300 in 1885-86, of which 21 per cent. died; while in the last year under report 34 per cent. died, as already mentioned in para 4, owing chiefly to want of rain.

Nurseries.—The total area under nurseries in the Division was 100¾ acres at the close of the year 1886-87, of which the actual area stocked with plants was nearly 74 acres. The largest nurseries in the Division are those in Dharmsala, which are stocked with valuable Deodar, kail and chil,—these cover an area of 37½ acres and are well looked after.

Nurseries in Jullundur District.—The District of Jullundur claims the largest number of nurseries, *viz.* 21, or one more than the number reported in 1885-86, a new nursery having been established in the village of Jamsher in the Sadr Tahsil: the largest of the nurseries in this District, however, covers an area of only a little over two acres. In 1885-86, one nursery at Phillour was surrendered to Government with some land adjoining, for a new encamping-ground. In lieu of this, it is contemplated to acquire some of the old canton ment land in Phillour, and to establish a new nursery there. The nurseries are well stocked, and in addition to plants taken therefrom for road-side avenues, over 45,000 were given gratis to zamindars, and to the Executive Engineer and the Military Department within the last three years.

Ludhiana District.—In the Ludhiana District there are five nurseries: those within the Sadr tahsil are reported to be well attended to. The Deputy Commissioner has very full remarks on the subject in his report, which I need not repeat, but would at the same time commend to notice. A new nursery has been started in the District at Khanna, though unfortunately all operations have for the present been stopped in this direction for want of funds.

Ferozepore District.—In column I of the Ferozepore District statement, the total area shown, as set apart for nurseries, is 22¼ acres, while the statement for 1885-86 shows only 8¼ acres. The increase has been accounted for by the remark that 12 acres at a place named Kalgarhi, and 2 acres at Bhura, were "taken back from zamindars who had failed to fulfil the terms of the mafi." This note, however, is hardly sufficient in itself, and the matter should have been explained by the Deputy Commissioner. Of these 14 acres again, 2 acres are shown to have been sown or planted during the last year, and the remainder as land "on which cultivation has failed or from which plants will be removed." Of the remaining 8¼ acres, 7 acres are reported to have been stocked with trees or established plants at the end of the year 1886-87. The species of trees cultivated are mangoe, date, shisham, farash and kikar.

Further remarks in regard to Ferozepore District, and the report rendered by the Secretary to the District Board.—As usual, Rai Maiya Dass, Secretary to the District Board, Ferozepore, gives some account of the plan adopted in the District of planting on road-sides and holding the watering establishment responsible, under penalty of fine, for the progress of the young trees; the system being the same as that remarked on at page IX of the printed report for 1883-84, and which was recommended for general adoption. It does not appear, however, to have been tried in any of the other Districts of this Division. Furthermore, Rai Maiya Dass brings to notice a scheme for extending arboriculture, which has been tried with some success, of planting and sowing at two different seasons—from January to March and again from July to September—holding the establishment responsible for the amount of work required to be done within given localities in the space of time mentioned. The report concludes with a somewhat elaborate detail of rules for general management, sowing, planting, fencing, felling, pruning, thinning, &c. Some account is added of experiments made to grow the Australian saltbush, which, however, have not so far proved successful, probably owing to want of more perfect instructions as to time and mode of sowing and cultivating generally; but a further experiment is being made.

Gardens.—As to gardens, the Deputy Commissioner of Kangra says nothing more than that "ornamental gardens exist at Dharmsala, Palampur, Kulu, Hamirpur and Dehra," and the Deputy Commissioner of Hoshiarpur has no remarks on the subject at all; indeed the report rendered by Mr. Harris is meagre in the extreme.

In the Jullundur District there are five public gardens,—*viz*, (1) the Empress or Town Hall garden at Jullundur (Civil lines), (2) the Jullundur tahsil or "Narain" garden, (3) The Katchery compound garden, (4) The Nawashahr Baradari garden, and (5) The Nakodar nursery garden. Full details regarding these are given by the Deputy Commissioner. 11 kanals of land have been added to the first named and hopes are entertained of the income in due course being much increased. With the exception of the Nawashahr Baradari garden, which is self-supporting, as it contains many old fruit trees, all the gardens in the

District are worked at a loss—the expenditure being very considerably above the income. The following figures show for the past three years the amount by which the outlay exceeded the receipts :—

	1884-85.	1885-86.	1886-87.
	Rs.	Rs.	Rs.
(1) Empress garden	1,201	1,302	1,396
(2) Tahsil „	287	230	950
(3) Katchery „	189	197	178
(5) Nakodar „	Not stated in Distt. Report.	184	141

The Empress, Tahsil and Nakodar gardens are maintained jointly from District and Municipal funds ; while the garden in the Katchery compound and that at Nawashahr are kept up entirely by the District Board—though, as mentioned before, the latter pays for itself. The extraordinary expenditure during the last year under report at the Jullundur tahsil garden, was due to the sinking of a new well on an improved plan at a cost of Rs. 707.

Ludhiana and Ferozepore Districts.—Beyond mentioning what the income from and expenditure on "Ornamental gardens" has been during the past three years, the Deputy Commissioner of Ludhiana has furnished no information on the subject, while the Deputy Commissioner of Ferozepore, and Secretary to the District Board have not touched on the matter of gardens at all.

Establishment.—As the District statements of "expenditure incurred on arboricultural operations" exhibit *separately* the cost of the establishment, it is unnecessary to repeat figures here. In the Kangra, Hoshiarpur and Jullundur District reports, full details are given of the strength of the establishment maintained, but no such particulars have been furnished by the Deputy Commissioners of Ludhiana and Ferozepore, and the Commissioner is unable therefore to note briefly, as he would wish to do, what the entire staff employed in the Division is.

Income.—The income for the past four years is noted in the table below :—

	1883-84.	1884-85.	1885-86.	1886-87.
	Rs.	Rs.	Rs.	Rs.
Kangra	182	448	322	391
Hoshiarpur	14,135	not stated by Dy. Comr.	4,633	3,617
Jullundur	4,497	6,087	7,314	9,364
Ludhiana	2,638	2,600	2,811	3,272
Ferozepore	1,508	2,732	2,688	2,915
Total ...	22,960	11,867	17,768	19,559

Remarks as to income in Hoshiarpur District.—It is much to be regretted that the Deputy Commissioner of Hoshiarpur has not given any figures for past years in his report : those for the year 1884-85 would have been very useful for the purpose of comparison with the large receipts during the year preceding, amounting to Rs. 14,135, as against Rs. 4,633 in 1885-86 and only Rs. 3,617 in 1886-87. No reason has been offered for the falling-off, but it has to be remembered that the high figure of the year 1883-84 was exceptional to a very considerable degree, owing to the extensive felling of old trees, which alone yielded a return of about Rs. 12,000 and greatly swelled the total income, as may be judged from a glance at the following figures for the three years preceding :—

Income during	1880-81	... ...	Rs. 8,581.
„ „	1881-82	... ...	„ 6,441.
„ „	1882-83	... ...	„ 7,714.

Jullundur District.—The increase in the Jullundur District is explained to be due to two causes : (1) "The total income and expenditure of both District and Municipal funds having been entered in the statements of the past two years instead of the portion credited and debited to District funds only, as was done previously," and (2) to "larger income from sale of trees and grass, and specially from sale of timber from plantations (Rs. 1,000 were realized from one plantation in 1885-86 and Rs. 1,805 from another in 1886-87").

Income in other Districts of the Division.—No reasons have been given by the Deputy Commissioners for the increases and decreases in the other Districts of the Division : it would have been satisfactory to know the cause of the rise in the Ferozepore District of over Rs. 1,200 in the receipts during 1884-85, compared with those of the previous year.

Expenditure.—The tabular form below shows the expenditure for the same period for which the income has been noted above:—

	1883-84.	1884-85.	1885-86.	1886-87.
	Rs.	Rs.	Rs.	Rs.
Kangra	1,170	1,614	1,815	1,667
Hoshiarpur	5,849	not stated by Dy. Comr.	7,270	8,809
Jullundur	5,991	5,792	7,116	7,826
Ludhiana	4,578	5,920	6,253	6,209
Ferozepore	7,129	8,152	8,400	9,692
Total ...	24,717	21,478	30,854	34,203
Total Income ...	22,960	11,867	17,768	19,559
Deficit ...	1,757	9,611	13,086	14,644

Kangra District.—No explanation has been given for the increased expenditure in the Kangra District during the past three years; but a reference to the statements for the three years preceding that for which the last report was rendered, will show that comparison with the figures for 1883-84, *viz.* Rs. 1,170, is of little use, as in 1882-83 the outlay was as high as, Rs. 2,472; while, on the other hand, in 1880-81 and 1881-82 it was only Rs. 695 and Rs. 650 respectively.

Hoshiarpur District.—In Hoshiarpur too, the outlay has, during 1885-36 and 1886-87, far exceeded that of the year 1883-84 (figures for 1884-85 again not having been given by the Deputy Commissioner). There is no doubt the expenditure in this District is far too high; this is acknowledged by the Deputy Commissioner in his report and certain remedial measures suggested as to management and supervision, which are worthy of consideration. Mr. Harris remarks "probably something will be done towards altering the system in next year's Budget Committee;" and this is undoubtedly called for.

Jullundur District.—The increase in expenditure in the Jullundur District during 1886-87 is explained by the Deputy Commissioner to be due to a sum of Rs. 707 having been spent in the construction of a new well at the "Narain" or Jullundur tahsil garden, and to larger outlay on the extra establishment employed for watering the young plants on road-sides; but nothing has been said to account for the rise of Rs. 1,324 in the expenditure during 1885-86, over the outlay of the year before.

Ludhiana District.—The figures of the Ludhiana District hardly call for notice at first sight, seeing that the outlay during 1885-86 and 1886-87 has only exceeded that of the year 1884-85 by about Rs. 300; but it would have been satisfactory to have received some explanation of the increase of Rs. 1,342 during the latter year over the outlay of the one preceding; and going back still another year, it is found that the expenditure was then Rs. 4,000 only, or Rs. 2,000 below that of the year 1883-84.

Ferozepore District.— In the Ferozepore District, the outlay has been somewhat excessive and has increased year after year. The expenditure during the last year under report, it will be seen, exceeded that of 1883-84, by no less than Rs. 2,563. For the rise of Rs. 1,292 over the figures of the year 1885-86, it is explained that heavy outlay was incurred in obtaining from distant parts large quantities of the Arabian date seed, as also seeds and young plants of the mangoe and other varieties of shady and useful trees for road-sides, but if the experiments inaugurated by Mr. O'Brien are maintained, this expenditure will be fully justified.

Fodder trees.—In regard to the subject of the planting of trees which could be utilized as fodder, to which attention was invited in the Government of India letter No. $\frac{1019}{145\text{-}2}$ A., dated 5th December 1885, received under Mr. Wild's forwarding letter No. 1819 of 7th January 1886, the Deputy Commissioners of Kangra and Jullundur have made brief remarks, showing that there is no necessity to cultivate fodder plants in these Districts. On the 19th of January 1886 the District Officers in this Division were all addressed by me, and asked to specially mention the subject in the next report submitted. A year ago the Deputy Commissioner of Hoshiarpur wrote showing that no necessity existed for the planting of fodder trees, and furnished a list of a large variety of plants which grow wild almost all over the District, and which, in the event of prolonged drought, could well be utilized for fodder.

The Deputy Commissioner of Ludhiana (then Mr. Wakefield) also wrote about the same time stating that the zamindars were in the habit of keeping fodder "in store for at least two years in case of a necessity arising, and have also kikar trees in abundance planted on their village lands which would supply fodder for cattle in case of drought." In regard to kikar trees, Mr. Walker, the present Deputy Commissioner, has some remarks

in his report: he shows that the tree is not popular with the zamindars, who over, he says, "that one full grown kikar tree renders useless a full kanal of land," and when he proposed, "at a District Board meeting to distribute kikar seed to all the members, who were to send in a statement of the roads and places where they had sown it," his proposal found little favour, and some few of the members broke out into open remonstrance"! I think it must be admitted that in a highly cultivated District, the shade of the kikar assuredly is very prejudicial to crops.

Remarks as to general scheme for District arboricultural operations.—A circular was issued by the Commissioner to all District officers in the Division in January 1885, with reference to the remarks of His Honor the Lieutenant-Governor, contained in para. 6 of the review of the Provincial Report for 1883-84, as to the necessity of preparing a scheme which they could propose for the guidance of arboriculture operations. This circular, together with the replies received and the whole file of correspondence, is forwarded herewith in original for perusal and return, and any orders it may be thought desirable to issue to Deputy Commissioners.

In conclusion the Commissioner feels it necessary to record that so far the experiment of making over arboricultural operations to District Boards has been the reverse of successful, and in all cases it should be a rule that Tahsildars shall supervise these operations.

8.—LUDHIANA DISTRICT.

General remarks.—The expenditure on tree-planting during the last three years and the number of trees planted are shown in the following statement :—

	Expenditure on planting of trees.	*Number of trees planted on road side.*
1884-85	3,612	4,217
1885-86	3,730	4,570
1886-87	3,701	3,607

The expenditure is very much below the mark considering the importance of the subject, and a still more regretable feature is the total inadequacy of the work done in comparison even to the small expenditure shown. No extension work was done at all, only existing avenues received any attention.

I had hoped to be able to furnish an exact statement of the number and condition of the trees existing on each road, but there was no establishment which could be relied on for the preparation of accurate statistics, and although the District Committee have now sanctioned the appointment of a Darogha, there has not been time to take action on the sanction.

The large number of full grown trees which some of the roads under the District Board possess notwithstanding that the soil is too light and arid to be favourable to arboriculture, shows that considerable attention has been paid to the subject in past years: but an examination of the statistics of work done in last three years and its results; and still more a local inspection of these roads on which a staff professed to have been employed, force one to the conclusion that the very necessary element of supervision has been entirely wanting. Brick or mud enclosures have been built at some time or other for protective purposes, and young trees have been planted inside them; but the enclosures have been allowed to fall into a dilapidated condition, and the young trees have died for want of water.

The cause of this deplorable condition of things is not far to seek. Arboriculture was a subject to which I believe Mr. Wakefield paid considerable attention, and it could only have been due to his efforts that some of the roads now possess in parts good avenues of trees of some years growth. But during the last two or three years, there has been a desire to give Local Boards every opportunity of exercising full and unrestricted control over matters connected with Local funds, particularly over such matters as seem to afford the least opening for the abuse of their new power in consequence of the too sudden removal of outside interference. In this District arboriculture was evidently one of the subjects selected by Mr. Wakefield to make over entirely to Local Bodies in the hope that they would recognize and act on the responsibilities with which they were invested. I regret to have to state that the experiment has been a failure, and the reason for the failure is that the Local Bodies have been in the habit of leaving the supervision and the payment of the watering and planting establishment, the pruning and lopping of trees, and the sale of their wood and cutting absolutely and unreservedly in the hands of the only official they had in their employ, namely the Sub-Oversesr of their circle. The result of such an arrangement can be imagined. I have discussed the matter with several of the members of the Local Bodies and I believe they will admit that I am not overdrawing the case.*

Nurseries.—There are five nurseries in the District, one at Ludhiana itself, which, receiving as it does, full attention and supervision, gives satisfactory results. A second is a Bassian where a large rest-house stands. Here again the nursery is will looked after

* All these point to an exceedingly lax supervision or want of supervision on Deputy Commissioner's part to be accounted for by his dislike to going into camp as he should have done.

as Bassian rest-house is often visited by the Officers of the District. The third at Samrala tahsil possesses ample ground, good means of irrigation and a large staff: but the tree growing operations have hitherto been by no means commensurate with these advantages. There is a large enclosure at Jagraon tahsil, intended originally, I imagine, for a nursery; but heretofore the staff allowed to it was quite insufficient. This has now been remedied. Siris, shisham and fruit trees of various sorts are grown in these nurseries, and are distributed freely to any of the villagers who take the trouble to ask for them. The existing nurseries, though quite sufficient, as far as producing power goes, to supply the District, are not conveniently situated, except for certain roads; one more nursery has now been started at Khana, but further operations in this direction must be postponed until more funds can be provided for arboriculture in next year's budget. The expenditure on nurseries during the three years is shown below. Much more I hope will be expended this year, if the funds allow of it.

1884-85.	... 1885-86.	... 1886-87.
698	... 625	... 778

The villagers appear generally glad to get fruit trees to plant out, and I hope to utilize this taste for the purpose of teaching them that the cultivation of trees is by no means the unprofitable business they imagine it to be. As might be expected in a closely farmed district like this, where they cultivate every inch of land that is culturable, they have a strong objection to road-side avenues, averring that one full grown kikar tree renders useless a full kanal of land. I am told that one unmetalled road which was fairly well lined with kikar trees has now been left perfectly bare; the trees having been gradualy cut down by the zamindars in the course of several years. A proposal I made at the District Board meeting to distribute kikar seed to all the members, who were to send in a statement of the roads and places where they had sown it, evidently obtained little favor, and some few of the members broke out into open remonstrance. I pointed out to them the serviceable qualities of the trees, but to no effect. For their tools I imagine they get sufficient wood from their village common, and for fuel, they still utilize the cowdung cake.

Under these circumstances I am of opinion that the avenue-growing of trees in this district should be confined to a few of the most important lines of communication which are within reach of supervision. These should retain their establishment for initiative work until they are lined throughout with well grown trees that do not need further irrigation—and should also always be allowed a separate establishment for protection of existing trees and for filling in gaps caused by the fall or decay of old trees. The balance of the funds allowed for arboriculture should be devoted to the growth of nurseries at all places where occasional supervision is certain to be given: for the present a large space of ground in each nursery should be allotted to the growth of fruit seedlings, as these only are in demand among the zamindars.

Little can be done this year in the direction of extending the tree-growing operations owing to the want of funds—as it is, the additions to the staff that have been considered absolutely necessary if any satisfaction is to be obtained out of our expenditure, are likely to call for sanction to an increase in the Budget grant for arboriculture, but much can be done by supervision, and every effort will be made to obtain an adequate result in return for such expenditure as the Committee finds itself able to afford. I further hoped shortly to put on record a scheme of work in keeping with the suggestions contained in Section 13 and other portions of the Arboriculture Committee's report of April 1886.

Financial results.—The financial results of the three years under report were as follows :—

	1884-85.		1885-86.		1886-87.		
	Income.	Expenditure.	Income.	Expenditure.	Income.	Expenditure.	
Ornamental gardens ...	...	1,610	108	1,898	165	1,730	
Nurseries	120	698	43	625	132	778	
Avenues and groves ...	2,480	3,612	2,660	3,730	2,716	3,701	
Afforested wastes ...	...	...	...	...	259	...	
Total	2,600	5,920	2,811	6,253	3,272	6,209	

The income from sale of wood is made mostly on trees that have decayed through old age or have been blown down by the wind.

9.—FEROZEPORE DISTRICT.

Income.—There is an increase of Rs. 227 in the income against that of last year, and it is attributable to the gradual development of trees which when old or otherwise blown down are sold; also to more systematical lopping of trees than was practised heretofore.

Expenditure.—There is also an increase of Rs. 1,292 of expenditure on avenues and groves above that of the preceding year for the following reasons, *viz*: Arabian dates and mangoes and many other plants were procured from distant stations by railway and other means which cost a considerable sum, and also several new nurseries of date, mangoes and other useful and shady trees have been established in this district.

Description of work.—Kerwala plantation.

Groves.—New groves have been planted on 28 acres of land during the year under report, against 61 acres 2 roods planted in the previous year, and as special attention was paid to the establishing of nurseries during the year, hence less land was taken up for new groves.

The number of trees planted during the year under report in groves is 63,956 which cost Rs. 5,211 or 8·14 per cent, out of which 22,336 or 34 per cent. have died, while during the last year 12,144 trees were planted at a cost of Rs. 3,463 or 28 per cent. out of which 2,365 or 21 per cent. had died. The increase in the death of young plants was especially noticeable in that portion of the Muktsar tahsil where the canal water cannot reach, and there was very little rain during the rainy season of the year under report.

Avenues.—The length of the lines planted during the year under report is 140, 641 feet or 1,27,362 feet more than that of the preceding year, on which 1,39,712 trees were planted at a cost of Rs. 4,481 or Rs. 3·32 per cent, out of which 38,438 or 20 per cent. have died, while in the last year 57,248 trees were planted at a cost of Rs. 4,900 or Rs. 8·55 per cent. This satisfactory result was achieved through the irrigation by the District Canals and digging well levelled lines along the roads for avenues.

Nurseries.—The area planted during the current year is 3 acres 3 roods, or 3 acres 1 rood move than last year. All these nurseries have been planted with large number of dates, mangoes, bakains, shisham and farash &c.

The chief trees planted during the year were mangoes, dates, shisham, farash, and kikar.

Note by Deputy Commissioner.

Description of work.—The late Deputy Commissioner, Mr. O'Brien, took great personal pains, and paid special attention to the cultivation of the date palm. He obtained several seers of seeds from the Persian Gulf, as well as several maunds from Mooltan, and sowed the seeds most extensively. One maund of date seeds were sown in the Attari nursery, covering about an acre of land which have all germinated and are progressing favourably. Two maunds two seers of seeds were sown in the Kutchery, Sessions House and Dâk Bungalow compounds, altogether covering an area of 10½ kanals of land, the seeds have also germinated and are mostly flourishing: some of the young plants are about 10 to 12 inches in height. It is believed that by next year they will be sufficiently big to be planted out. If successful, a great addition will, by these means, be made to the food supply of the district in time of famine.

Mangoe seeds were also very extensively sown by Mr. O'Brien; a few of the young plants suffered last winter from frost, but the majority are progressing very favourably and are now two to three feet in height. Both date and mango seeds were also distributed to some of the zamindars to encourage them in the cultivation of these kinds of trees. This has really been the first experiment in the cultivation of these kinds of trees in the district, and so far it is successful. The circumstances of this district are well adapted to the growth of these trees, and there is every hope of the experiment proving a success.

Mode of plantations.—The same old plan, as reported in 1883-84, has been adhered to in planting.

Another system of extending arboriculture has also been tried with some success during the year under report. The season of planting and sowing new trees has been divided into two parts, *viz.*, from January to end of March. and again in the rainy weather from July to end of September, and after due enquiry as to the amount of work that could be accomplished in each tahsil during each of the above two seasons, every jamadar of trees was told how much he had to do during each season, and where the men had failed to finish the work assigned to them they had to explain why it was not done. This system is very useful, inasmuch as each man in charge of his sub-division knows what work is before him.

It was found necessary to send the Darogah to the Changa Manga Forest Department to learn some practical lessons on arboriculture, although this man had worked well for several years, but it is absolutely necessary that he should also have some systematical training. The Darogah is expected to return to resume his work in a few months; in the meantime the work is carried on by the jamadars of their respective sub-divisions.

Australian salt bush.—I said in my last report that the seed of Australian salt bush was sown, and that the result will be reported in the next report, but as the seed was sent without any instructions as to the time of sowing and mode of looking after the plant, the new and foreign seed was tried in more than one place, and notwithstanding special care

having been taken of it the seed did not germinate, which was reported to the Director of Revenue and Settlement Records who sent the seed. He has again sent a small quantity of this seed with instructions from Doctor Quinnell who has tried it with success, although the said instructions have not been received from the country where the seed has come from, but it is the result of the experience gained by the Doctor. I have just sown the seed carefully again and hope to report better results hereafter.

The land for Kehruwala plantation (423 acres) was bought for Rs. 5,179 in the year 1883.

During the first year *i. e.*, 1883-84, 5 acres of land were planted with trees.

	Acres.
In 1884-85 ...	5
In 1885-86 ...	15
In 1886-87 ...	20

Total acreage planted with trees, 45 acres. Generally these trees have been planted alongside of ditches 15 feet apart from each others and irrigated during the hot weather by canal water. Nearly eight thousand young trees now stand on these forty-five acres. The tallest tree is 9 feet; the smallest (*i. e.*, last year's) being only about a foot high.

The trees are mostly kikar, which appears to flourish well on this land.

The land which could not be planted with trees all at once has been leased out and the following income realized :—

	Rs.	A.	P.
1884-85	258	10	6
1885-86	498	0	0
1886-87	554	11	8
Total to date ...	1,311	6	2

The following is the expenditure which has been incurred on the plantation to date :—

	Rs.	A.	P.
1883-84	100	0	0
1884-85	145	12	8
1885-86	244	1	6
1886-87	1,146	6	6
Total expenditure Rs. ...	1,636	4	8

The above includes the making of water-cut from the Canal, and a kutcha well; the digging of ditches for the trees and labor for planting, and cost of establishment; also the digging of a small tank to keep water when the inundation Canal stops and there is no rain.

JULLUNDUR DISTRICT.

General remarks.—The rainfall during the 3 years under report was as follows :—

	Inches.
1884-85 ...	28
1885-86 ...	22
1886-87 ...	21

while the average fall of the past 5 years is 26 inches. Last year in consequence of little or no rainfall in the cold weather, the District Board had to employ a larger watering establishment for road-side trees.

No event of any special nature affecting arboriculture occurred during the period under report.

Description of work.—(*a*) *Roads.*—The work was chiefly confined to the following new lines of road :—

(1). *Jullundur and Tandah road.*—This road is 19 miles long, of which about ½ mile consists of the bed of sandy *chos* or hill torrents, leaving 18½ miles under tree plantation. Up to the end of 1883-84 15½ miles of the road had been planted, the remaining 3 miles were planted—2 in 1884-85 and 1 in 1885-86.

(2). *Jullundur to Nurmahal viâ Jamsher.*—This road is 16 miles long, 8 miles in the Jullundur and 8 in the Phillour tahsil. Four miles had been planted in previous years, and 9 miles during the past 2 years, as detailed below :—

On the portion lying in the Phillour tahsil	...	2½ miles	during 1885-86.
Ditto	ditto	... 2½ miles	do. 1886-87.
Ditto	Jullundur	... 4 miles	do. do.

3 miles of the road in the Phillour tahsil remain to be planted, and this will be completed in the current year.

(3). *Nakodar to Sidhwan ferry viâ Mahatpur.*—This road is 12½ miles long and is entirely in the Nakodar tahsil. 5 miles were planted prior to 1885-86 and 7½ miles during 1885-86 and 1886-87.

(4). *Rahon to Phillour viâ Awar.*—This is the principal road to Phillour from the Nawashahr tahsil, and is 12 miles long from Rahon to the confines of the tahsil. Four miles were planted in previous years, 4 miles in 1885-86 and the remaining 4 miles in 1886-87. The trees planted last year were not so successful as previously, about 75 per cent. have died out in consequence of neglect in watering them. They are the farthest away from the tahsil and supervision is more difficult.

Except this road, the trees planted on all other roads have been generally successful as will be observed from the statement.

Besides the above new work, gaps, and blanks have been filled np in all the metalled roads of the District as well os in the principal kacha roads.

The work as detailed above, has been done in accordance with an arboriculture scheme carefully drawn up by the District Board and approved of by the Commissioner in February 1885. New lines of roads will be undertaken after the old ones have been well stocked with trees.

(6). *Nurseries.*—One nursery was established in 1886-87 in the Jullundur tahsil at Jamsher, while that at Phlillour was surrendered to Government in 1885-86, along with other land required for the new encamping-ground. A scheme for the acquisition of some of the old cantonment land and the formation of a new nursery at Phillour, is under consideration. The total number of nurseries, 21, is therefore the same as it was at the end of 1883-84.

In addition to trees planted on road-sides in the District, 45,267 plants were given to the Executive Engineer, the Military Department, and to zamindars free of cost from the nurseries as noted below :—

	No. of trees.
During 1884-85 ...	34,337
1885-86 ...	3,783
1886-87 ...	7,147
	45,267

Groves or plantations.—There are 20 plantations on the banks of the Sutlej, or 3 less than they were in 1883-84. The area of 2 groves, *viz.*, Jania and Mirajwala in the Nakodar tahsil, was washed away by the river during the past year, and that of Mundi-Kassu in the same tahsil during 1884-85.

The trees of the plantation at Lisarah in the Phillour tahsil were sold last year for Rs. 1,805, and the area amounting to 31 acres will be sown with trees in the present rainy season.

(1). *Public gardens.—Empress or Town Hall garden at Jullundur.*—This garden is maintained jointly by the District and Municipal Committees. The income and expenditure during the past 3 years were as follows :—

Year.	*Income.* Rs.	*Expenditure.* Rs.
1884-85	459 ...	1,660
1885-86	381 ...	1,690
1886-87	364 ...	1,760

The income of the garden is always fluctuating. The expenditure during the past 3 years has been normal.

In the current year 11 kanals of land have been added, and it is hoped the income will in future be much increased. This garden is kept up more as an ornament than a paying concern.

(2). *Narain or the Jullundur tahsil garden.*—This garden is similarly maintained by both Committees. The income and expenditure have been as follows :—

Year.	*Income.* Rs.	*Expenditure.* Rs.
1884-85	50 ...	337
1885-86	50 ...	280
1886-87	110 ...	1060

The abnormal expenditure during 1886-87 was on account of construction of a well on an improved plan at a cost of Rs. 707.

(3). *Katcherry compound garden.*—This garden is maintained entirely by the District Board, and the income and expenditure during the period under report was as detailed below :—

Year.	*Income.* Rs.	*Expenditure.* Rs.
1884-85	... ...	189
1885-86	... ...	197
1886-87	19 ...	197

The income of Rs. 19 last year was from sale of flowers and fruit; this will increase with the age of the trees.

(4). *The Nawashahr Baraddri garden.*—This garden is also maintained at the cost of the District Board, and it pays well as will be observed from the following memo, the reason being that the garden contains many old fruit-bearing trees :—

Year.	*Income.* Rs.	*Expenditure.* Rs.
1884-85	340 ...	313
1885-86	350 ...	389
1886-87	254 ...	210

(5). *The Nakodar Nursery garden.*—This garden was prior to 1885-86 maintained from Municipal funds, but the District Board from that year in consequence of the establishment of a nursery in it, has shared the cost. The income and expenditure during the past 2 years have been—

Year.	*Income.* Rs.	*Expenditure.* Rs.
1885-86	... ...	184
1886-87	22 ...	183

and as there is a nursery a large income is not expected.

Establishment.—The following establishment was employed :—

ROADS.

Besides the *nauker* coolies who are employed on metalled roads both for petty repairs to the roads and for watering plants, the District Board spent the following amounts on extra watering establishment :—

Year.	Rs.
1884-85	1,011 per annum.
1885-86	892 „
1886-87	1,157 „

NURSERIES.

The Jullundur Sadr nurseries.

	Rs.	
1 Gardener...	10	per mensem.
2 Mates @ Rs. 5 each	10	„
5 Coolies @ Rs. 4 each... ...	20	„
1 Coolie	3	„
Total ...	43	„ =Rs. 516 per annum.

TAHSIL NURSERIES.

18 coolies @ Rs. 4-8-0 each=Rs. 81 per mensum=Rs. 972 per annum.

GROVES.

	Rs. A.	
1 Jemadar	15 0	per mensem.
5 Peons @ Rs.4-8 each ...	22 8	„
Total ...	37 8	„=Rs. 450 per annum.

GARDENS.

Empress garden.

	Rs.	
1 Head gardener	15	per mensem.
1 Mate	8	„
1 Bhistie	4	„
7 Coolies @ Rs. 4 each ...	28	„
2 Ditto 2 „ ...	4	„
1 Sweeper	3	„
Total ...	62	„=Rs. 744 per annum.

Narain garden.

	Rs. A.	
1 Gardener	3 8	per mensem.
2 Coolies	7 0	„
Total ...	10 8	„=Rs. 126 per annum.

Katcherry compound garden.

	Rs.	A.	
1 Gardener	3	8	per mensem.
2 Coolies	7	0	„
TOTAL ...	10	8	„=Rs. 126 per annum.

The same gardener works in both these gardens.

The Nawashahr Baradari garden.

	Rs.
1 Gardener	6
2 Coolies @ Rs. 4 each	8
TOTAL ...	14=Rs. 168 per annum.

Nakodar Nursery garden.

	Rs.
1 Gardener	6
1 Cooly	3
TOTAL ...	9=108 per annum.

The general supervision of arboricultural operations is entrusted to the Local Boards, but last year as the work was not properly done, Major Wood passed orders to the Tahsildars look to after this branch of the District Board work also. It is impossible to expect the members of the Local Boards to exercise any close and constant snpervision.

FINANCIAL RESULTS.

Year.	*Receipts.* Rs.	*Charges.* Rs.	*Deficit.* Rs.	*Surplus.* Rs.
1883-84 ...	4,497	5,991	1,494	....
1884-85 ...	6,087	5,792	...	295
1885-86 ...	7,314	7,116	...	198
1886-87 ...	9,364	7,826	...	1,538

The increase under Receipts and Charges during 1885-86 and 1886-87 as compared with 1883-84 and 1884-85, is on account of the total income and expenditure of both District and Municipal funds having been entered in the statements of the past 2 years instead of the portion credited and debited to District funds only as was done previously.

Again there was a larger income from sale of trees and grass and specially from sale of timber from plantations (Rs. 1,000 were realized from one plantation in 1885-86 and Rs. 1,805 from another in 1886-87).

The comparatively large expenditure during 1886-87 was due to the construction of a new well at the Narain garden at a cost of Rs. 707, and to extra expenditure on watering establishment employed for roadside trees.

With reference to Commissioner's Circular No. 23-184, dated 19th January 1886, regarding fodder plants, there has never been, so far as has been acertained, an actual failure of fodder, for Jullundur is thoroughly irrigated by a large number of wells all over the country which are every year increasing.

The probabilities of a fodder famine are therefore very few. Hence there appears no necessity to cultivate fodder plants in this District.

The Deputy Commissioner calls attention to the progress statement of avenues planted, in which the length of lines are to be denoted in feet. Suggests that the length of line be denoted in yards in future.

12.—HOSHIARPUR DISTRICT.

General remarks.—The total rainfall during the year was 39·5 inches. There were no fresh plantings, consequently no progress has to be recorded, the establishment being solely employed in maintaining plantings of previous years, and filling in gaps.

Description of work.—There are 2 small *jhiris* or groves in this district, the property of the District Board, *viz.*, at Dhomai in Tahsil Garhshankar and Pandogah in Tahsil Una. The total area of these groves is 3 acres and 38 poles. No revenue has been realized from these sources, nor are the groves of any extent.

Income.—The total income during the year has been Rs. 3,617, a detail of which is given below :—

Detail of income.	Name of Tahsil.				
	Hoshiapur.	Dasuah.	Una.	Garhshankar.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.
By sale of dry timber loppings &c. ...	979	129	213	1,154	2,475
„ fruit	392	111	50	20	573
„ grass	58	...	8	62	128
„ Khar Kana	...	41	...	199	240
„ Lakh	...	45	28	87	160
Miscellaneous	31	...	...	...	31
Total	1,460	326	299	1,522	3,607

The above figures do not include income from encamping-grounds.

Expenditure.—The total expenditure has been Rs. 8,809, a detail of which is given below for each Tahsil :—

	Hoshiarpur.	Dasuah.	Una.	Garhshankar.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.
Establishment	1,837	1,600	1,704	1,406	6,507
Miscellaneous	1,819	155	154	134	*2,262
Total	3,656	1,755	1,858	1,540	8,809

	Rs.
Extra Establishment	697
New pakka drains*	1,080
New mashaks	25
Feed of bullocks	164
Persian wheel	248
Miscellaneous	48
Total ...	2,262

Establishment.—The detail of establishment charges is given below—

Hoshiarpur Tahsil.

1	Jamadar	@ Rs. 10	per mensem.
1	Mali	„ 5	„
18	Malis each	„ 4	„

Dosuah Tahsil.

1	Jamadar ...	@ Rs.	7	0	0	per mensem.
3	Malis each ...	„	5	0	0	„
3	Do. „ ...	„	4	8	0	„
22	Do. „ ...	„	4	0	0	„
4	Do. „ ...	„	3	8	0	„

Garhshankar Tahsil.†

1	Jamadar	@ Rs.	7	per mensem.
25	Malis each	„	4	„

Una Tahsil.†

1	Mali	@ Rs.	6	per mensem.
2	Malis each	„	5	„
22	Do. „	„	4	„
1	Do.	„	3	„

Total 3 jamadars and 101 malis.

There is also a temporary addition to establishment made during the hot weather, and the cost of this establishment during the year under report was Rs. 627.

The expenditure during the current year is Rs. 1,539 more than last year. This is due to masonry drains having been constructed in the Station gardens.

This expenditure in establishment is in my opinion in a district like this far too heavy. At least it is, I think, not applied in the right direction. On the Sirwal land of this part of the Doaba, as also in the lower parts of the Una Doaba, the trees do very well by them-

* These were in the station garden and should not have been charged to this head at all.—G. G. Y.

† This large establishment is not supervised at all. The members of the District Board do not exercise any real control and feel any real interest in the work.—G. G. Y.

selves after having attained a very slight growth, and this is to be expected in a country where sugar-cane grows unirrigated. I would suggest for future years that the District Board turn its attention to particular avenues on which after the trees have attained a certain height, they may in great measure be left to take care of themselves, and other avenues attended to thereafter. As the case stands at present, there can be no proper supervision of this heavy establishment, at least until individual members of the District Local Boards will take an interest in this. In consequence of want of proper supervision the mâlis, &c., are more village servants than Government ones. Probably something will be done towards altering the system in next year's Budget Committee.

The total length of roads in this district is 712 miles; of this length 353 miles are planted out. No new line of road was planted during the year with the exception of a small piece of the Una and Pirnigaha road.

10,211 trees were planted during the year to fill in gaps of existing avenues, *viz.* in Tahsil Hoshiarpur 1,474, Dasuah 4,190, Una 1,182, and Garhshanker 3,365.

The following figures show the number of existing trees :—

	Hoshiarpur.	Dosuah.	Garhshankar.	Una.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.
No. of trees planted in previous year ...	41,374	63,516	62,940	53,522	2,21,352
Do. do. in 1886-87 ...	1,475	4,190	8,365	1,182	10,212
Total ...	42,849	67,706	66,305	54,704	2,31,564
No. of trees that failed during the year ...	1,504	2,106	1,209	995	5,814
Do. now standing ...	41,345	65,600	65,096	53,709	2,25,750

There are no regular nurseries in this district, but nurseries for the supply of seedlings and young trees exist in each of the encamping-grounds, also in the tahsil gardens.

13.—KANGRA DISTRICT.

General remarks.—During the last three years there was no drought, fire or other calamity in any part of the district especially affecting arboriculture, but many young trees are lost each year in the dry months before the rains, as funds are not available in this district for maintaining a proper watering establishment.

With reference to Commissioner's Circular No. $\frac{7}{79}$, dated 8th January 1885, it has been already pointed out that the want of sufficient funds prevents arboriculture operations being carried on in a very systematic manner; the best however is done that the limited means at the disposal of the District Board admit of.

With regard to Commissioner's Circular No. $\frac{33}{1884}$, dated 19th January 1886, it may be mentioned that there is no necessity in this district for paying any special attention to planting fodder trees more than other kinds. Grass preserves and forests abound throughout the district, and no scarcity of fodder is ever experienced.

Description of work.—Avenues.—The total length of the roads in this district is 922 miles, of which avenues are planted on 612 miles (or 32,33,896 feet). The length of single lines is 31,05,116 feet.

The subjoined figures taken from columns III and IV of the Returns, will give some idea of the progress made in road side tree-planting during the last 3 years—

Year.	*Planted in.*	*Lost in.*	*Percentage successfully planted.*
1884-85 ...	4,26,496 feet.	2,79,651 feet.	35 per cent.
1885-86 ...	3,69,487 „	1,39,657 „	63 „
1886-87 ...	1,44,209 „	92,293 „	37 „
TOTAL ...	9,40,192 „	5,11,601 „	46 „

The most satisfactory results have been attained on the Mandi and Phagwara road (a new road which runs for some 40 miles through the Hamirpur tahsil), and fair work has also been done in the Kulu, Plach, Palampur and Nurpur tahsils. In Kangra and Dehra, where nearly all the main roads have already good avenues, the work has consisted chiefly of replacing dead trees and filling up gaps on the existing lines.

The total length of lines on which trees were planted at the end of 1886-87 was 31,57,032 feet. No useful comparison can be made with the figures of previous years, owing to the obvious inaccuracy of the returns of such years.

Nurseries.—The total area set apart for nurseries is a little more than 44 acres, of which nearly 43 acre s are actually stocked.

The nurseries in Dharmsala, where the larger portion of this area is situated, consist chiefly of deodar, kail and chil. A large quantity of seed of the different varieties was sown in 1884-85. These nurseries are well looked after and arein good condition.

The nurseries along the Mandi-Phagwara road in the Hamirpur tahsil are flourishing ; those in Nurpur are supervised by the Municipal Committee, and contain Chinese mulberry which is in demand for sericulture purposes.

There are no groves or plantations, but ornamental gardens exist at Dhamsala, Palampur, Kulu, Hamirpur and Dehra.

Establishment.—Prior to 1885-86 there was no regular establishment, but in 1885-86 1 rakha on Rs. 5 per mensem was sanctioned for each tahsil of Kangra proper. In addition to this, a special establishment costing Rs. 25 per mensem is entertained for the Mandi-Phagwara road (a line of recent construction) on which a large number of trees are planted annually.

The total expenditure including a contribution of Rs.2-8-0 per mensem towards the pay of an additional rakha for Palampur, is Rs. 52-8-0 per mensem or Rs. 630 per annum.

There are 2 malis and 1 rakha on Rs. 5 each employed on the nurseries at Dharmsala under the supervison of the Kotwal who is allowed Rs. 10 per mensem. The total expenditure is Rs. 300 per annum. The other nurseries are looked after by the tahsil rakha or mali, and no extra expenditure is incurred.

The establishment employed on gardens is 2 malis at Dharmsala and Hamirpur on Rs. 11 per mensem, 1 at Kulu on Rs. 5, and 1 at Dehra on Rs. 5 per mensem, or Rs. 396 per annum in all.

With the exception of the nurseries at Dharmsala, which can be conveniently looked after by the Deputy Commissioner himself, the existing establishment works under the supervision of the several Local Boards to whom the tahsil roads have in most part been made over for repairs and maintenance. The Tahsildars are also required to interest themselves in the progress of arboriculture operations.

The Assistant Commissioner in charge of Kulu supervises the operations in that subdivision, and Messrs. Dane and Johnstone have done their best to further road-side arboriculture in Kulu, but the want of funds for entertaining a sufficient and skilled establishment has always proved a great obstacle.

Financial results.—The income and expenditure for the 3 years under report is given below—

	Expenditure.	*Income.*	*Deficit.*
	Rs.	Rs.	Rs.
1884-85 ...	1,614	448	1,166
1885-86 ...	1,815	322	1,493
1886-87 ...	1,667	391	1,276
TOTAL ...	5,096	1,161	3,935

The different heads of expenditure have been detailed above ; the income consists of sale proceeds of dead trees, grass and fruit. The trees sold and credited to Provincial services is not shown in these returns.

14.—GURDASPUR DISTRICT.

General remarks.—Nurseries.—There were 8 nurseries at the beginning of 1884-85 in this District. To these were added during 1886-87 ten new ones, which were opened in various parts of the District on main lines of communication. Of these, three however have failed for want of proper arrangements for watering the tress.

Fences.—Fences are made of Cactus or of thorny branches of the kikar or phula, sometimes shisham branches are used when others are not procurable. The fencing is formed by erecting a circular mud enclosure, 1 to 2 feet high and 4 feet in diameter, round the tree with a trench outside it, and planting the Cactus or the thorny branches of trees over the mud wall. This constitutes the best and most economical fencing and answers the purpose of protecting the trees admirably well.

Watering.—Experiment was made last year of watering some mango trees at Sadr station with 'gharas' buried at the root of the tress. It was a suceess from a financial point of view, as one man could water in this way a larger number of trees, but it is doubtful if the plan would succeed on the District roads, for with all the supervision available at head-quarters a very large number of gharas were broken and had to be placed by new ones.

Species of trees.—In former years no distinction was made in selecting trees for road-side plantations, but the mistake of planting inferior trees where good ones will grow, was recognized by Mr. Coldstream, and only large fruit and timber trees, such as mangoe,

jaman and shisham are now planted in this District. A supply of the best kind of country mangoes and of seed of the Mawa (Bassia Latifolia) was obtained last year from the Saharanpur Botanical gardens, and these were sown in the Government garden nurseries. They will be fit for transplantation next year

Some Eucalyptus trees were planted in the Government gardens. They seem to thrive well on the canal bank or on wet soil.

Thinnings and Loppings.—On some District roads in the Gurdaspur tahsil where the trees are planted too close together, thinning operations were carried on last year very successfully. No trees were felled until they were marked out by the Secretary to the District Board or the Tahsildar.

Some large jaman trees on the Dinanagar and Bahrampur road near Awank were in December and March 1886-87 lopped of their lower branches which overshadowed the fields. The result was very statisfactory. A considerable area was restored to cultivation and the sale proceeds of the loppings realised a fair price while the trees continued to afford an equal amount of shade to travellers. The experiment will be tried elsewhere.

The injury done to the zamindars by road-side avenues is not sufficiently appreciated. In this District, acres and acres of land have been thrown out of cultivation by the shade of road-side trees, and hitherto the trees have always been planted at the extreme edge of the road, no matter how wide the road may be. If trees are planted on a wide road so as to leave a good broad pathway between their trunks, and the ditch marking the boundary of the road, the road is better protected, and the zamindars are saved from needless injury.

Description of work.—The following comparative table will show the amount of work done during the past three years :—

Year.	Length of single line stocked with trees during the year.	No. of trees planted	Description of trees planted.
	Feet.	*No.*	
1884-85 ...	24,229	2,953	Mangoe, mulberry, shisham, sukhchain, beyt, jaman.
1885-86 ...	75,085	5,210	Mangoe, jaman and shisham.
1886-87 ...	82,070	5,470	Do. do.

The planting operations were pushed on with great vigour by Mr. Coldstream during the rainy and winter seasons of 1835-86, and almost all the gaps on the roads leading from the Sadr station have been planted up for a distance of 4 and 5 miles from Guardaspur.

About 21 acres of land lying waste in the Civil station were planted with mangoe tress last year. All these trees have been securely fenced and regularly watered.

Hitherto arboriculturel operations have been restricted for want of a sufficient supply of plants, but now that new nurseries have been opened, it will be possible to carry on operations on a more extensive scale. A very large number of cuttings of fruit and other trees (between 15 to 16 thousand) were planted during the past year in the nurseries of the Government garden, but owing to absence of rain and the unusual dryness of the autumn and winter season, a great many of them have dried up. It is, however, believed that the number remaining will prove abundant for the requirements of the District.

During the past three years extra gangs of bhistis were employed in planting trees during the rains and in the winter season.

Miscellaneous.—An experiment of burning charcoal in pits was made last year in the Government gardens, the charcoal turned out was good, and it was all sold in a short time, but from a financial point of view, the experiment was not a success. It seems that the manufacture of charcoal will prove remunerative only in places where there is difficulty in carrying wood to the market, and when the charcoal is made from inferior kinds of wood.

Establishment and supervision.—The following is a detail of the arboricultural establishment of the District during the past three years :—.

			1886-87.	1885-86.	1884-85.
			Rs.	Rs.	Rs.
Superintendent of arboriculture on Rs. 50 a month ...			600	600	
SADR STATION.					
	Rs.				
1 Jamadar @ Rs. 8 ...	... 96				
6 Malis @ 5 each ...	360	...	456	456	
GUARDASPUR TAHSIL.					
2 Jamadars @ Rs. 8 and 7	... 180				
16 Mails @ Rs. 5 each ...	... 960	...	1,140	636	
BATALA TAHSIL.					
1 Jamadar @ Rs. 10 ...	... 120				
11 Mails @ Rs. 5 each ...	... 660	...	780	636	5,072
PATHAN KOT TAHSIL.					
1 Jamadar @ Rs. 8 ...	... 96				
12 Mails @ Rs. 5 each ...	... 720	...	816	636	
SHAKAGARH TAHSIL.					
1 Jamadar @ Rs. 8 ...	... 96				
15 Mails @ Rs. 5 each ...	... 900	...	996	996	
Contingencies ...	...	...	281	300	
Working and Establishment of gardens and nurseries...			2,463	1,905	
	TOTAL	...	7,532	5,865	5,072

Financial results.—The income has been :—

		1886-87.	1885-86.	1884-85.
		Rs.	Rs.	Rs.
By sale of road-side trees	...	2,443	1,790	
,, mulberry leaves	...	260	133	
,, Grass	...	104	18	
,, Fruit of road-side tress ...	...	225	...	1,684
,, Lac	...	3	4	
Income of gardens and nurseries ...	...	887	886	
TOTAL	...	3,922	2,831	1,684

It will be seen that the income has been steadily increasing every year, and there is reason to hope that in a few years' time when all the fruit trees planted on District roads and in the Government gardens commence bearing, there will be a further considerable expansion of revenue. At the same time the results are decidedly disappointing. There is no district in the Punjab better suited for arboriculture than Gurdaspur, and yet there is a net deficit on the three years of Rs. 10,032 ; wood seems to sell very badly in the district, and the prices obtained for fallen tress on the road-side are very low. The district is generally well wooded and unless the arboricultural operations can be made to pay their way I think that they should be curtailed, and expenditure restricted. If I were to remain in charge of the district, I should be disposed to try tree-planting by contract instead of by daily labour. The expenditure on establishment is enormous.

15.—AMRITSAR DISTRICT.

Description of work.—Tree-planting.—The progress made in tree-planting is given in the following table:—

	Number planted in nurseries.	*Number planted on road-side.*	*Total.*	*Number died.*	*Balance.*
1884-85 ...	64,800	7,075	71,875	31,600	40,275
1885-86 ...	13,000	4,512	17,512	3,000	14,512
1886-87 ...	15,500	3,866	19,366	4,200	15,166
Total ...	9,330	15,453	1,08,753	38,800	69,953

Nurseries.—In 1884-85 four new nurseries were established, *viz*: Gilwali, Sheron, Sirha and Chogawan, and a large number of timber and fruit tree-seedlings were put down, of which a great number died suddenly that year as will be seen from the above figures; since then these nurseries are in a flourishing condition. The latter is the largest in the District. It covers an area of 9½ acres of land. It was previously only a nursery, but has now sprung up into a nice garden, consisting of fruit trees, such as mangoes, peaches, loquats, guavas, limes, oranges, plantains, &c. A plot of land in this garden is reserved for a nursery, and a large number of timber and fruit plants are thriving well, from which supplies are issued to a considerable extent for road-side purposes and for private use gratis. At an average, 3 acres of land are sown annually with seedlings and cuttings in nurseries.

Avenues.—The energies of the arboriculture establishment under the direction of the Board, have been devoted principally to preserving existing trees on road-sides and supplying the gaps made by unfavorable seasons—thus about 80,000 feet of single lines of avenues are planted on an average yearly; and in filling up blanks on road-sides.

The following are the new lines of roads on which trees were planted:—

		Trees.	
In 1884-85	Amritsar-Ferozepore road to Chabhal, 10 miles ...	2,750	
In 1885-86	Kathunangal Railway feeder, Amritsar-Pathankot line	400	
	Jaintepura ditto ditto ...	100	
	Attari-Ajnala 20 miles to complete remaining miles	225	
	Jandiala-Vairowal road	160	
	Tarn Taran-Jandiala road	190	
	Cattle fair road	100	in 1886-87.
	Road to Amritsar Jail	140	
	Jhandiala-Vairowal road	100	
	Tarn Taran-Jhandiala road	150	

About 1,500 kikar plants of spontaneous growth are to be found yearly on road-sides. These are tended and cared for and become part of the round avenues.

Groves.—It is intended to sow the encamping-grounds with kikar seed in trenches along their outer superficies except an opening on one side, at a very small cost, for it is difficult to raise to maturity any tree except the kikar without the expense of keeping up a special watering establishment. The kikar thrives admirably in this District and produces a useful timber.

Future plan of operation.—There is much new work to be done on roads, but for want of funds nothing more can be done for some time to come. The Board's attention is at present devoted to the two lines of road, on which planting operations commenced in 1885-86 as shown above *viz*—

Jhandiala-Vairowal road, 13 miles.
Tarn Taran-Jhandiala road, 10 miles.

When these are completed other new lines will be taken in hand.

Fodder trees.—The special cultivation of trees for fodder purposes is not carried out to any great extent in this District. The District in parts abounds in fodder trees, such as the siris, ber, kikar, farash, pipal and shisham, the leaves of which cattle and goats eat, but during seasons of drought, the fodder which these trees would produce would not suffice for a week's consumption for all the cattle in the District.

Owing to the large area irrigated by the Bari Doab Canal, the zamindar naturally thinks more of producing ordinary crops, and it is useless pointing out to him that on certain land the cultivation of trees should in the end be more remunerative than many crops. The rearing of trees receives but little attention from agriculturists though they are offered plants gratis.

Financial results.—The receipts for the three years under review have been as under:—

	1884-85.	1885-86.	1886-87.	TOTAL.
	Rs.	Rs.	Rs.	Rs.
Ornamental gardens	...	35	46	81
Nurseries	10	15	15	40
Avenues and Groves ...	1,385	3,121	1,934	6,440
Total Rs. ...	1,395	3,171	1,995	6,591

Income.—From the above it will be seen that the receipts have grown considerably, particularly in the year 1885-86 when the storms uprooted heavy trees to number of about 80 or 90 on District roads; these realized Rs. 950 and thus swelled the income. The usual receipts are from sale of decayed trees and fallen timber on road-sides, tree-loppings, compensation awarded by Courts for injury of trees, sale of fruits, &c. I may here mention that the supervision of the lopping of road-side trees is now generally entrusted to men specially trained in the work of pruning and thinning of timber, who do not cut down wholesale, in a merciless manner, trees for the sake of income, nor lop them so that they become mutilated and eventually die.

Expenditure.—The following table shows the expenditure during the last three years:—

	1884-85.	1885-86.	1886-97.	TOTAL.
	Rs.	Rs.	Rs.	Rs.
Ornamental gardens	...	...	416	416
Nurseries	580	1,279	641	2,500
Avenues and Groves	7,320	7,919	8,011	23,250
Total Rs. ...	7,900	9,198	9,068	26,166

3 average Rs. 8,722.

The allotment for 1886-87 for arboriculture was Rs. 1,000, from District funds for maintenance of trees on road-sides, supplemented by a grant of Rs. 1,032 from Provincial funds on account of maintenance of trees in Civil lines; these latter have been transferred from 1st April 1887 to the Municipality. The expenditure amounted to Rs. 9,068 or Rs. 36 in excess of grant, and was met from savings under other heads of account District funds.

The above shows that the expenditure has also increased during the past two years and the results recorded below appear commensurate with the expenditure incurred. As might be expected, avenue planting and tending road-side trees were the works on which the District arboriculture establishment was principally employed. Also new nurseries were opened and new lines of road-planted, as detailed above.

LAHORE DIVISION.

General remarks.—Rainfall.—The rain-fall was scanty as will be seen from the following table in which the fall in the district during each of the past three years is compared with the fall during the preceding 3 years :—

DISTRICT.	1881-82.	1882-83.	1883-84.	1884-85.	1885-86.	1886-78.
Lahore	18·2	22·4	19·8	12	14·9	12·5
Average	...	20·1	...	...	13·1	...

In the annexed table the rainfall in each of the 4 tahsils during the past 3 years is given :—

TAHSIL.	1884-85.	1885-86.	1886-87.
Lahore	19·4	22·2	20·8
Kasur	10·1	15·5	18·4
Chunian	6·9	9·5	4·5
Sharakpur	11·8	12·7	10·6
Average Lohore District	12	14·9	12·5

It will be seen that the Chunian tahsil has been the worst off. The rains too were not always seasonable.

Calamities.—No calamitous events, such as hail-storms, fire, hurricanes, &c., causing extensive injury to trees, occurred. Nor have any complaints of whiteants having destroyed

young or living plants been received. The reports of all the Tahsildars on the condition of the avenues, groves and nurseries under their care are fairly satisfactory, more so than they have been in previous years.

Road-side avenue planting and tending road-side trees were the works on which the district arboricultural establishment was principally employed. The formation of new nurseries and planting of road-side groves of shelter-giving trees is also receiving due attention

Description of work.—Avenues.—To come to facts and figures. During the past 3 years a total length of 33 miles 3 furlongs and 20 poles of avenue has been added to the roads in the district, the following description of trees being principally used, *viz.* shisham, tut, mango, farash, jaman, pipal, siris and kikar. More shisham was planted than any of the other kinds.

This, however, does not include tree-planting operations within Municipal limits carried on by Municipalities.

The operations of Municipalities are shown separately in the returns submitted. The following abstract shows the lengths added in each of the 4 tahsils :—

Lahore	13 miles	and 18 poles.
Kasur	4 ditto	1 furlong and 23 poles.
Chunian	5 ditto	and 4 furlongs.
Sharakpur	10 ditto	7 furlongs and 19 poles.

The amount of work done compares favorably with the results obtained in the preceding 3 years. Considering the result, I think a fair amount of attention has been given by Tahsildars to road-side tree planting. The establishment in all 4 tahsils were also employed in filling up gaps in existing avenues and tending and watering the young plants put down in the length added during the past 3 years.

It is not necessary to recapitulate here the work done in each tahsil, as the statements which have been submitted in this and in the two previous years show in great detail the whole operations year by year up to the year 1886-87. From the avenue progress statement it would appear that about $\frac{2}{3}$rds of the roads in the district yet remain to be planted with avenues. I am inclined to believe that the proportion is greater. It is hopeless, of course, to expect that the whole length of all district roads will eventually have avenues planted on them.

Nurseries and groves.—In Tahsil Lahore new nurseries have been planted at Baddo, Barth, Dugaich and Shahdera. No new groves were however planted during the past 3 years.

In Sharakpur new nurseries were formed during the year 1886-87 near Mangtanwala and Sheikhupura roads, The nurseries at these places supply all local wants. In Kasur new nurseries have been opened at Gharyala Bope Rai, Kulla, Rukhanwala and Valtoha. The plantings are reported to be flourishing. The Tahsildar reports that new groves have been planted at a cost of Rs. 140 during the year 1886-87 near the Luliani encamping-ground, and 50 trees have been planted in the encamping-ground at Kasur to replace those that died off.

In Chunian a new nursery was formed during the year 1886-87 at the side of the Changa Manga road. New groves were also formed during the years 1885-86 and 1886-87 near the encamping-grounds at Chunian and Bhai Pheru.

Establishment and supervision.—The Sub-Overseer at each of the tahsils supervises all planting operations in addition to performing his own duties. The following is an abstract of the detailed statement of establishment employed and their cost during the past 3 years :—

Tahsil.	Establishment.			Cost.		
	1884-85.	1885-86.	1886-87.	1884-85.	1885-86.	1886-87.
				Rs.	Rs.	Rs.
Lahore	12 men	11 men	11 men	375	681	663
Chunian	15 „	9 „	5 „	482	401	205
Kasur	9 „	9 „	12 „	675	527	690
Sharakpur	15 „	10 „	11 „	391	336	488
Total ...	51 men	39 men	39 men	1,923	1,945	2,046

Reference to the detailed statement of expenditure will show that out of the totals of Rs. 3,500, 2,930 and 2,987 expended during the past 3 years, Rs. 1,923, 1,945 and 2,046 were paid to the establishment respectively.

Financial results.—In the following table the income and expenditure for the past 3 years are compared :—

Tahsil.	Income.			Total Expenditure.		
	1884-85.	1885-	1886-87.	1884-85.	1885-86.	1886-87.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Lahore	104	92	121	1,618	1,221	1,004
Kasur	...	81	125	675	620	917
Chunian	106	49	33	547	466	360
Sharakpur	601	39	172	660	623	706
Total	811	261	451	3,500	2,930	2,987

The increased income during the year 1884-85 is due to the fact that the income from sale of fallen and dead trees was abnormally large in the Sharakpûr tahsil that year.

Concluding remarks.—I would in conclusion mention that it is difficult to review the results of the years planting operations when these are expressed in the forms prescribed in *feet, vide* progress statement for 1886-87. The total length of roads in the Lahore District is shown to be 17,43,443 feet, the total length of avenues planted 5,63,592 feet. To comprehend these swollen and therefore unmeaning figures, it is necessary to convert them into yards, poles, furlongs and miles: and to do this at every step is very inconvenient. The lengths should be shown in miles, furlongs &c.

16.—JHANG DISTRICT.

General remarks.—It is evident that owing to scanty rainfall in the past three years the results in connection with tree-planting were not good. Arboriculture generally failed on this account, hence no detailed report is sent. Measures will be taken towards the improvement of this scheme, this season, if the weather is favourable.

MONTGOMERY DIVISION.

17.—MONTGOMERY DISTRICT.

	Tahsils.		1885-86.		1886-87.
General remarks.—Rainfall.—	Montgomery	...	8·3	...	8·9
	Gugera	...	8·3	...	6·9
	Dipalpur	...	8·0	...	8·0
	Pakpattan	...	7·5	...	9·0

or for the whole District 8·2, 8·8, which is considerably less than the average calculated on the last 5 years which is :—

1885-86.		1886-87.
10·54	...	10·7

and is not sufficient for arboricultural operations.

In this District whiteants are very destructive and do a great deal of damage.

Description of work.—Avenues.—Total length of avenues planted during 1885-86 amounted to 1,000 feet. No avenues were planted during the year under report. Trees planted to the extent of 3,050 feet in single straight lines failed during the year, against 2,430 feet in the preceding year. The increase in the number of failures is due to scanty and unseasonable rainfall. The work done during the present year 1886-87 consisted of replacing dead trees with fresh ones wherever required, and protecting young and delicate trees from frost, by covering them with grass during the very cold months.

The percentage of trees successfully planted during the past three years was about 50.

A large portion of the roads in this district remain unplanted owing to the bad quality of soil and to scarcity of water along the road-sides.

Groves.—Total area of groves existing in this District at the end of the year under report was 31 acres, against 28 acres the preceding year. The groves at Gugera and

Attari consist of old and large trees and require no particular care. At other places the plantations are young and require some looking after.

The kinds of trees sown or planted are generally kikar, ber, shisham, mangoes and a few other fruit trees.

Nurseries.—No special areas were set apart for nurseries, but small plots in gardens were kept stocked with cuttings and young plants for the purpose of replacing dead trees on roads, &c.

Establishment and supervision.—The following establisment was maintained during the year and the expenditure thereon amonted to Rs. 1,055 as follows:—

Ornamental gardens.

			Rs.
1	Carpenter	@	10
1	Mali	„	6
2	Coolies	„	5 each.
1	Do.	„	3
1	Blacksmith	„	2-8

Montgomery Tahsil.

Avenues and groves.—Contractor for watering trees at Chichawatni @ Rs. 10 per mensem.

Gugerah Tahsil.

			Rs.
1	Mali	@	10
1	Do.	„	8
3	Coolies	„	5 each.
1	Do.	„	3

Contractor for watering trees at Okarah @ Rs. 5 per mensem.

Dipalpur Tahsil.

Contractor for watering trees at Dipalpur @ Rs. 10-0-0 per mensem.

The establishment at the Station garden worked under supervision of the Secretary District Board and the Deputy Commissioner, and those in tahsil under that of the Tahsildars.

Financial results.—The following table shows the expenditure, income and net cost of arboricultural operations in this District during the past three years :—

Years.	*Expenditure.*	*Income.*	*Net cost.*
	Rs.	Rs.	Rs.
1884-85 ...	3,546 ...	724 ...	2,822
1885-86 ...	5,750 ...	463 ...	5,287
1886-87 ...	6,065 ...	949 ...	5,116

The increase in expenditure during 1885-86 and 1886-87 is chiefly due to the purchase of bullocks to replace several old animals that died and also to the purchase of a Pulsometer Pump for supply of water in the Station garden.

MOOLTAN DISTRICT.

General remarks.—The annexed table will show the average rainfall for the last 3 years and the year under report :—

Tahsil.	1883-84.	1884-85.	1885-86.	1886-87.	Remarks.
Mooltan	6·2	7·7	9·7	5·3	
Shujabad	5·1	8·2	7·9	4·4	
Lodhran	2·6	7·1	4·4	2·2	
Mailsi	4·4	4·8	6·9	3·0	
Sarai Sidhu	4·3	7·7	2·5	0·9	
Average	4·5	7·1	6·3	3·1	

Thus the average rainfall for the district has been the lowest within the last four years. Rainfall has been gradually decreasing since 1884-85, and this decrease has been very injurious to trees and is one of the main reasons why there are so few trees on the roads in the district.

There is great difficulty in keeping trees alive on the road-sides—the rainfall is so small and the water so far from the surface that trees of five and six years of age die at once, unless regularly watered. The cost of watering is so great that operations must be limited.

A large nursery and grove is being prepared now on the Sidhnai canal land,—Government having allowed 45 acres to be taken for the purpose. The first cost of starting will be about Rs. 1,000. Extensive planting is being done now on the roads within the influence of the above canal.

Description of work.—The following avenues were planted during the last three years:—

	1886-87.	1885-86.	1884-85.
	Feet.	*Feet.*	*Feet.*
Mooltan to Bandarghat ...	5,020	20,624	8,000
Do. to Jalalpur *viâ* Shujabad	2,900		17,660
Shujabad and Basti Maluk road			3,060
Shujabad town and Railway station road	2,339	520	2,859
Mailsi and Tibba road ...	2,910	6,472	3.660
Mailsi and Jum Thal road ...	2,310	582	1,900
Mailsi aud Kabror road ...	2,430	2,551	2,060
Jalalpur and Kabror road ...	4,475	10,050	...
Tibba and Karampore road...	...	2,461	...
Road round the city of Mailsi	...	3,467	...
Shujabad and Lodhran road	3,100	...	...

From this it will be seen that most work has been done on the Bandarghat road and on the road between Jalalpur and Shujabad. These avenues are maintained by the owners of wells on the road-side and they are paid at a rate varying from 3 pies to 6 pies per tree per month. In the Lodhran tahsil a special establishment is kept up for watering trees.

Groves.—No new groves were planted during the last three years ; the existing groves are mentioned in the statement sent with the report; they occupy an area of 49 acres 2 roods 17 poles.

Nurseries.—17 marlas of land was planted with shisham, siris, bohar, and pipal trees as a nursery in the gardens at Mailsi, Karor, and Lodhran.

Establishment.—The following establishment is maintained for the avenues and nurseries in the District :—

1 jamadar @ Rs. 10.

5 gardeners @ „ 7 each—
- 1 gardener at Lodhran.
- 1 „ at Mailsi.
- 1 „ at Sarai Sidhu.
- 1 „ at Shujabad.
- 1 „ at Pakhi Mian.

5 gardeners @ Rs. 6 each—
- 2 gardener at Tahsil Mooltan.
- 2 „ at „ Mailsi.
- 1 „ at „ Sarai Sidhu.

8 gardeners @ Rs. 5 each—
- 1 gardener at Lodhran.
- 1 „ at Kahror.
- 3 „ on the roads in Lodhran.
- 1 „ at Tibba.
- 2 „ in Sarai Sidhu.

1 boy @ Re. 1-8 per mensem at Malsi.
1 „ 8 anas per mensem at Faridkot.

The men paid at Rs. 10 and Rs. 7 generally supervise the road-side trees and look after the nurseries at head-quarters of the Tahsils.

Financial result.—The total charges on arboriculture during the 3 years under report have been shown in the annexed table—

	1884-5.	1885-6.	1886-7.	Total.
	Rs.	Rs.	Rs.	Rs.
Establishment	4,633	4,769	4,080	13,882
Feed of bullocks	4,583	4,692	5,040	14,515
Purchase of seed	697	182	234	1,113
Miscellaneous including payment by results	813	1,200	600	2,613
Total.	10,726	10,843	9,954	3,523

The income during the last 3 years from the various sources is given below :—

	1884-85.	1885-86.	1886-87.	TOTAL.
Gardens	1,950	1,844	1,808	5,602
Nurseries	4	1	3	8
Avenues and groves	773	879	1,964	3,616
Afforested waste	...	...	16	16
TOTAL.	2,727	2,724	3,791	9,242

Thus there has been a deficit of Rs. 22,281 during the last 3 years.

RAWALPINDI DIVISION.

19.—RAWALPINDI DISTRICT.

Rainfall.—Since 1884-85 the rainfall has been insufficient. In 1885-86 there was a marked decrease, and in 1886-87 it was so inadequate that a drought prevailed during the last six months of the year in several localities, but it was most severe in the western portion of the district comprising the Fatehjang and Pindigheb tahsils.

The rainfall in the three years in the different tahsils is shown in the subjoined table :—

	1884-85.		1885-86.		1886-87.	
Tahsils.	*Inches.*	*Tenths.*	*Inches.*	*Tenths.*	*Inches.*	*Tenths.*
Rawalpindi ...	37	8	35	5	15	4
Fatehjang ...	32	2	19	0	13	1
Pindigheb ...	16	8	18	5	5	8
Gujarkhan ...	34	4	18	6	12	5
Attock ...	20	7	24	8	6	1
Kahuta ...	55	3	38	6	15	6

Description of work.—Avenues.—The arboricultural operations are limited to the plain part of the district consisting of part of the Kahuta tahsil, and the Rawalpindi, Fatehjang, Pindigheb, Gujarkhan and Attock tahsils.

Notwithstanding the scarcity of rain a good deal has been done in tree-planting during the three years.

Gaps in avenues were either filled up or the avenues were extended on 41 roads in 1884-85, on 47 roads in 1885-86 and 39 roads in 1886-87.

The number of miles on which operations were carried out in each tahsil was as noted below :—

Rawalpindi Tahsil	...	36	miles.
Fatehjang „	...	9	„
Pindigheb „	...	3	„
Attock „	...	3	„
Gujarkhan „	...	10	„
Kahuta „	...	30	„

In all 1,24,424 trees were planted, of which 63,199 failed and 61,225 were established.

The number of trees planted in each tahsil is given in the subjoined table :—

TAHSIL.	1884-85.			1885-86.			1886-87.			TOTAL.		
	Planted.	Failed.	Established.	Planted.	Failed.	Established.	Planted.	Failed.	Established.	Planted.	Failed.	Established.
Rawalpindi	11,712	9,680	2,032	12,832	11,593	1,239	3,047	2,493	554	2,759	123,766	3,825
Fetahjang	2,325	1,230	1,095	3,409	1,325	2,084	1,260	350	910	6,994	2,905	4,089
Pindigheb	1,184	373	811	850	...	850	1,010	24	986	3,044	397	2,647
Attock	2,257	402	1,855	514	...	514	1,712	50	1,662	4,483	452	4,031
Gujarkhan	29,389	11,951	17,438	19,428	17,425	2,003	...	...	...	48,817	29,376	19,441
Kahuta	5,600	4,450	1,150	3,034	1,173	1,861	24,861	680	24,181	33,495	6,303	27,192
Total ...	52,467	28,086	24,381	40,067	31,516	8,551	31,890	3,597	28,293	1,24,424	63,199	61,225

Result.—The operations in the Kahuta tahsil have been extensive and successful. Of the large number of trees planted 81 per cent. were established. This is the only tahsil in which arboriculture can be carried on with advantageous results, the climate and soil being well suited for tree-planting. In the Gujarkhan tahsil a large number of trees were planted, but of these only 39 per cent. were established. In this tahsil the rainfall is usually sufficient, but the soil is not suited for tree-planting. In the Rawalpindi tahsil also a comparatively large number of trees were planted, of which, however, 20 per cent. only have thriven. This is an average tahsil for tree-planting. In the Fatehjang, Pindigheb and Attock tahsils the number of trees planted was small, but a comparatively large number succeeded, being 58 per cent. in Fatehjang, 86 in Pindigheb, and 89 per cent. in Attock. In Ilaqua Sohan of the Fatehjang tahsil and Ilaquas Chach and Huzro of the Attock tahsil, trees can be propagated without difficulty. In the Pindigheb tahsil the climate is hot, rainfall scanty and ground hard.

It must also be borne in mind that the planting on the road-sides is carried on in this district almost entirely though the agency of the zamindars. In only a few special localities is an establishment for watering such trees maintained.

In addition to the trees planted on roads, 2,968 were planted in the vicinity of tahsils, school houses, dispensaries and other public buildings in 1884-85, 2,898 during 1885-86 and in 1886-87 1,400.

Fodder trees.—In the villages at the foot of the hills in the Rawalpindi tahsil, 700 trees suitable for fodder have been planted, such as daman, khooa and koliar. But where grass is not obtainable, cattle eat freely the leaves of the shisham, mulberry, bakain and ber, which are largely planted on road-sides and in groves.

Groves.—There are 1,003 groves on an area of 390 acres 2 roods 12 poles; of this land 192 acres 1 rood 26 poles, which was omitted from former statements, has now been entered.

Arrangements for purchase of land, owned by zamindars under groves.—Of the total area 175 acres 3 roods 16 poles are owned by zamindars. On this land there are 923 groves.

As it appeared most desirable that these groves should be conserved and maintained and this could only be done by purchasing out the rights of the zamindars in the land Colonel R. P. Nisbet, Deputy Commissioner, arranged for the purchase of the land by the District Board, and at a meeting of the Board held on the 25th October, 1886, a sum of Rs. 6,000 was sanctioned by the Board for payment to the zamindars as compensation for the land under the groves.

Nurseries.—The area set apart for nurseries is 18 acres 1 rood 39 poles, of which 4 acres 2 roods 30 poles are planted. Two additional poles were planted, one failed; there was consequently an area of 4 acres 2 roods 31 poles of established plants at the end of 1886-87.

These nurseries of forest trees are intended for road-sides and groves.

Gardens.—Fruit trees.—There are six public gardens in the District which are maintained for the propagation of fruit trees and flowers.

These gardens are at Rawalpindi, Chuttar (on the Rawalpindi and Murree road), Hasanabdal, Fatehjang and Pindigheb.

During the past three years they have been stocked with 3,102 fruit trees obtained from the Botanical gardens at Saharanpur and Lahore, or raised in the gardens; and 2,419 fruit trees have been distributed to zamindars and other private individuals.

A detail of the trees stocked in the several gardens and distributed from each is given in the following table:—

Year.	Number stocked in the garden of.							Number of fruit trees distributed to zamindars and other private individuals.
	Rawalpindi.	Selah or Chuttar.	Hasanabdal.	Fatehjang.	Gujarkhan.	Pindigheb.	Total.	
1884-85 ...	300	59	288	...	...	59	706	630
1885-86 ...	500	...	260	7	149	...	916	258
1886-87 ...	420	250	670	60	40	40	1,480	1,531
Total	1,220	309	1,218	67	189	99	3,102	2,419

Formation of nursery for English fruit trees.—English apple and pear trees have been distributed to zamindars of the Murree tahsil and are doing well. The climate and soil of this tahsil and a large part of the Kahuta tahsil are well suited for the production of European fruit. Arrangements have accordingly been made for the formation of a nursery for European fruit trees for these tahsils at "Charra Pani" on the Rawalpindi and Murree road some 10 miles below Murree. The land has been rented and laid out, and English apple, pear, cherry and other fruit trees have been obtained for the nursery from the Government nursery at Naini-Tal, and will be planted as soon as the rains set in.

Financial results.—The total income from all sources during the 3 years was Rs. 7,866, and expenditure Rs. 11,925.

Trees planted in Municipalities.—In the Municipalities of Rawalpindi, Huzro and Pindigheb 1,039 trees were planted.

By zamindars.—A large number of trees have been planted by zamindars at wells, tanks and musjids.

20.—JHELUM DISTRICT.

General remarks.—The average rainfall in the District during the last three years was—

1884-85	...	21 inches.
1885-86	...	23 „
1886-87	...	14 „

In Pind Dadan Khan tahsil rain was scanty in all three years under report, and in Chakwal and Talagang; in the last of the three arboricultural operations were in consequence retarded.

Description of work.—The following table shows the progress made in tree-planting during the three years :—

Tahsil.	Year.	Road-sides.	Gardens.	Avenues in yard.
Jhelum	1884-85	3,050	235	7,100
	1885-86	1,870	350	4,000
	1886-87	2,200	171	760
Pind Dadan Khan ...	1884-85	1,450	155	405
	1885-86	625	80	6,680
	1886-87	383	...	6,580
Chakwal	1884-85	20	55	...
	1885-86	200	...	...
	1886-87	100	...	...
Talagang	1884-85	336	194	...
	1885-86	1,672	...	...
	1886-87	80	171	...
Total ...	1884-85	4,856	639	7,505
	1885-86	4,367	430	10,680
	1886-87	2,763	342	7,340
GRAND TOTAL ..	...	11,986	1,411	25,525

The arboricultural operations were carried on on an extensive scale in Tahsil Jhelum in 1884-85 and 1886-87, but in 1885-86 in the three most favorable months for tree plantations, *viz.* July, August and February, the want of rain much hindered the work. The working in other three Tahsils is fairly good in proportion to the establishment at their disposal.

During the last three years 38,922 trees were planted, of which 6,541 or 16·80 per cent. died.

The loss being less than one-fifth is not extraordinary, considering the season.

100 trees in Tahsil Chakwal and 80 in Talagang, planted during 1886-87, dried up from want of rain which was only 11 and 12 inches respectively in these Tahsils.

30,360 feet more of road lines were stocked with plants in 1886-87, while the loss by failures or destruction of trees was much less, being in 3,880 feet only.

In pruning proper care was taken. Only such portions and branches were lopped as were deemed obstructive to the growth of the trees. The young trees were protected by fences made of kikar tree loppings; and were watered in the prescribed manner, that is, earthen pots were buried at the root of the trees and filled with water.

In the Jhelum Tahsil plants were mostly obtained from the District nursery at Beli Pira Ghaib; the Forest Department also contributed a small number.

In all the other Tahsils they were transplanted from the small preserves maintained along the road-sides for the purpose.

Species of trees planted.—The sisso, dhareg, mulberry and kikar trees were chiefly planted, but the soil of this district is most congenial to the sissoo.

Cuttings of fruit trees, such as alucha, loquat and apricot were planted in the gardens at Jhelum, Sheikhupura, Chakjamal and Choya Saiden Shah, and apple at Pind Dadan Khan, in addition to the above. They are all in a flourishing condition.

Nurseries.—Two roods more were stocked with cuttings of trees this year. The nurseries at Choya Saiden Shah and Pongra are favorably situated near water and are in good condition.

Establishment.—The establishment for arboricultural operations consists of—

1	mali	@ Rs.	25	per mensem.
1	do.	@ „	15	„
2	do.	@ „	10	„
1	do.	@ „	9	„
1	do.	@ „	7	„
1	coolie	@ „	6	„
29	do.	@ „	5	„
1	do.	@ „	4	„
1	pakhalis	@ „	12	„
3	do.	@ „	7	„
1	do.	@ „	6	„
2	bhistis	@ „	5	„
1	do.	@ „	1	„

Financial results.—The following comparative table shows the income and expenditure of the arboricultural operations for the last 3 years. The result is a deficit of Rs. 14,157. This is larger than it would probably have been but for the unfavorable seasons.

Tahsil.	Years.	Receipts.			Expenditure.			
		Garden.	Tree loppings and dead trees.	Total.	Garden.	Nurseries.	Planting road-side trees.	Total.
Jhelum ...	1884-85	109	487	596	2,129	275	1,462	2,866
	1885-86	285	519	804	3,081	439	1,211	4,731
	1886-87	210	523	733	2,330	293	1,191	3,814
Pind Dadan Khan	1884-85	123	55	178	448	490	...	938
	1885-86	103	137	240	268	180	176	624
	1886-87	359	190	549	359	238	196	793
Chakwal ...	1884-85	103	51	154	485	128	168	781
	1885-86	77	55	132	391	95	157	643
	1886-87	134	83	217	244	112	91	447
Talagang ...	1884-85	9	95	104	178	114	179	471
	1885-86	8	42	50	181	98	173	452
	1886-87	61	34	95	135	137	177	449
Total ...	1884-85	344	688	1,032	3,240	1,007	1,809	6,056
	1885-86	473	753	1,226	3,921	812	1,717	6,450
	1886-87	764	830	1,594	3,068	780	1,655	5,503
Grand Total ...	...	1,581	2,271	3,852	10,229	2,599	5,181	18,009

21.—SHAHPUR DISTRICT..

General remarks.—The rainfall of the year under report was much less than that of the previous year, being 10·7 against 15·4, and comparatively little could be done to extend the area under trees.

This year Dr. Henderson, who has kindly taken charge of arboricultural operations, is, notwithstanding the drought, making arrangements for extensive sowings of dates, mangoes and shisham, and for layers of vines, and I have had 250 acres belonging to Malik Umar Hayat of Kolra, sown with *shisham*, which is coming up very well.

Description of work.—The total number of trees planted during the year was only 1,164, out of which 343 died out, against 1,932 and 190 of the previous year,—drought being generally the cause of the failure.

Establishment.—The establishment kept up during the year was as follows:—

Road-side trees establishment.

		Rs.
13 beldars	@ Rs. 5 ...	65

Station gardens.

2 malis	@ Rs. 10 =		20
2 do.	„	6	12
2 do.	„	5	10
3 coolies	„	5	15
5 do.	„	4-8	22-8
1 do.	„	4	4
1 do.	„	2-8	2-8
Total ...			86

Gardens in Tahsils.

1 mali	@ Rs. 8 =		8
3 do.	„	7	21
1 do.	„	6	6
2 do.	„	5	10
1 do.	„	4	4
3 coolies	„	5	15
2 do.	„	4-8	9
1 do.	„	4-12	4-12
Total ...			77-12

Supervision.

	Rs.
1 Darogha arboriculture	25
1 Peon	5

Financial results.—The following is the statement of financial results for the year compared with the previous year:—

	1886-87.	1885-86.	Difference.
	Rs.	Rs.	Rs.
Income	3,607	2,967	+ 640
Expenditure ...	4,179	3,845	+ 334

The income of the year is derived thus—

	Rs.
Fruits	1,258
Plants	13
Grass	278
Thinning of groves and lines	2,013
Miscellaneous	45
Total ...	3,607

The expenditure of the year under report is made up of the following items:—

	Rs.
Pay of establishment of Station gardens	998
Ditto out Station gardens	927
Pay of Darogha and peon	309
Garden and arboriculture contingencies	697
Temporary Beldars	421
Subscription to Agri-Horticultural Society	120
Road-side trees establishment	707
Total ...	4,179

The income from sale of fruits is increasing, but is not so high as it ought to be with such a large establishment of gardeners. The result of former operations is now making itself felt in the increase of income from sale of thinnings. During the cold weather a considerable area of flourishing kikar groves near the Civil station and a portion of the line

line of trees along the Bhera-Shahpur road were thinned out to the advantage of the remaining trees. A grove of shisham on the bank of the Jhelum at Logari was threatened by the river and had to be cut down and sold.

22.—GUJRAT DISTRICT.

General remarks.—Nil.

Description of work.—Avenues.—Only those roads have been entered in the Avenue statement upon which arboricultural operations were in hand in 1886-87. This way of showing only such roads has been followed this year, as it is on the same principle as that observed in previous years. Shisham trees, especially in Gujrat Tahsil, have been planted out freely, fodder trees as a rule are not used for avenues in this district. Kikar trees grow and make good avenues. In the higher parts of the district there are some kikar avenues; and during the late (February and March 1886) fodder famine a good deal of fodder was derived from them; but the kikar is not so handsome nor is the timber so valuable as that of the shisham.

The thinnings were carried out under the special supervision of Mr. G. L. Smith, the Deputy Commissioner of this District, during the cold weather of 1886-87.

Income.—The income of the year is derived thus—

			Rs.		Rs.
Ornamental Gardens ...	Fruit	...	...	...	78
Avenues and Groves ...	Loppings	...	1,200		
	Thinnings	...	3,500		
	Dead trees	...	3,396		
	Grass	...	81	...	8,177
		Total		...	8,255

		1885-86.		1886-87.		
		A.	B.	A.	B.	
Expenditure.—	Ornamental Gardens ...	570	602	...	599	1,045
	Nurseries	60	240	...	180	180
	Maintenance and repairs	44	1,600	75	1,510	1,585
				Total	...	2,810

Total income for 1886-87 ...	Rs.	8,255	
Total expenditure do. ...	„	2,810	
Surplus	„	5,445	

During this year the total income has been Rs. 8,255 and the expenditure Rs. 2,810, leaving a surplus of Rs. 5,445 to the credit of the District fund.

Groves.—No remarks are offered.

23.—GUJRANWALA DISTRICT.

This report has been compiled from statistics supplied by Tahsildars. I have as yet not had the opportunity of forming any opinion of my own as to the progress of arboriculture and the means adopted to carry out arboricultural operations in the District.

General remarks.—The following comparative table shows the rainfall for the last 3 years in each Tahsil :—

	1884-85.	1885-86.	1886-87.
Gujranwala	21·1	23·2	25·2
Wazirabad	25·4	20·8	17·9
Hafizabad	15·9	19·6	15·7

The year 1884-85 was favorable to arboricultural operations; while the years 1885-86 and 1886-87 were not so, owing, to some extent, to scanty but more so to unseasonable rainfall. No special calamity, however, occurred to injuriously affect arboriculture.

Description of work.—As will be seen trom the fignres given below, very little work in the shape of the planting of new roads or portions of the same was done; the operations having been confined chiefly to the filling up of gaps and blanks on roads already planted and to the maintenance of avenues.

In 1884-85 the following roads were planted during the year :—

(1) Gujranwala to Shekhupura 1 mile with 284 trees.
(2) Gujranwala to Dinanagar 1 „ „ 325 „
(3) Wazirabad to Dhaunkal 1 „ „ 275 „

Besides 4,393 trees were put out on various roads to fill blanks and gaps.

In 1885-86; 1 mile of road from Sheikhupura to Kadrabad was planted during the year with 30 trees and 4,667 trees were planted on other roads to fill up gaps.

In 1886-87, 2,012 trees were planted on 4 miles of road from Gujranwala to Khanga *viâ* Kila Mian Singh and 1,400 trees on road from Wazirabad to Dhaunkal. In addition 2,050 trees were planted out to fill up blanks. No trees were specially planted for fodder.

Small nurseries have been planted at short distances from the roads where means of water supply are available, and small payments are made to zamindars for the maintenance of the same.

Method of planting.—Seedlings from 2 to 4 feet high are removed from nurseries and planted out it the spring as also in the rainy season, and are protected by bramble fencing, as also, in some places, by mud walls. In parts, however, where the soil is good, seed is sown in drills, and the plants carefully watered till sufficiently high to be independent of artificial irrigation. Shisham and kikar are found most suitable for planting out on road-side.

Lopping.—Lopping is carefully carried out with a view to injury to trunks of trees being avoided. No rare trees or plants were received for experimental culiivation.

Establishment and supervision.—The following establishment is kept up for protection and maintenance—

Name of Tahsil.	*Name of road.*	*Establishment.*		
Gujranwla ...	Gujranwala to Amritsar	6 bhistis on Rs. 4 per mensem each.		
	Ditto Ramnagar	3	ditto	ditto.
	Ditto Sialkot	3	ditto	ditto.
	Ditto Batala	2	ditto	ditto.
	Ditto Hafizabad	1	ditto	ditto.
	Ditto Shekhupura ...	12	ditto	ditto.
	Ditto Khiali	2	ditto	ditto.
	Ditto Naushera	1	ditto	ditto.
	Ditto Dinanagar	1	ditto	ditto.
	Ditto Khanga-Dogran ...	10	ditto	ditto.
Wazirabad ...	Encamping ground, Wazirabad ...	1	ditto	ditto.
	Sarai Ghakhar	1	ditto	ditto.
	Wazirabad to Ramnagar	4	ditto	ditto.
	Ditto to Dhaunkal	2	ditto	ditto.
	Dâk Bungalow, Wazirabad... ...	1	ditto	2 per mensem.
Hafizabad ...	Hafizabad to Gujranwala	7	ditto	4 ditto.
	Sheikhupura to Gujranwala ...	2	ditto	ditto.

Besides the above establishment there are 2 jamadars on Rs. 10 per mensem each employed in the Gujranwala; 1 jamadar on Rs. 6 per mensem in the Wazirabad, and 1 jamadar on Rs. 6 per mensem in the Hafizabad tahsils to supervise the work of bhistis.

Financial result.—The following table shows the income and expenditure during the past 3 years :—

Year.	*Income.*	*Expenditure.*	*Deficit.*	*Surplus.*
1884-85 ...	940	4,194	3,254	...
1885-86 ...	1,031	4,451	3,420	...
1886-87 ...	1,045	6,046	5,001	...

24.—SIALKOT DISTRICT.

The transfer from the Provincial Service to the District Board of 50½ miles of road from Wazirabad towards Gurdaspur, has caused an addition to the total number of miles of avenues in the District as shown last year.

General remarks.—Rainfall.—The rainfall of the year, though above the average, was not seasonable. There was good rain in June, July and August, and a great deal of tree-planting was done, but the want of sufficient rain in the following months resulted in the loss of a large number of young trees. Again during the winter planting season there was little or no rain and much work in the way of tree-planting could not be undertaken. The year was therefore on the whole an unfavourable one for arboriculture.

Injury by storms, &c.—Much damage was done to trees by storms. A large number were blown down during the monsoons and again in November and December. Unusual frost towards the close of the winter caused injury to young plants, especially to the mangoes which were planted along the Sikhund and at other places. I am sorry to note that a number of young plants on road-sides were pulled up by zamindars. Some cases in the Zufarwal and Sialkot tahsils, in which the delinquents were discovered, have been prosecuted. Much injury is done by shepherds and goat-herds who lop branches from trees to feed their sheep and goats on; many of them have been prosecuted and punished. Cattle found trespassing on the roads are also sent to the pound.

Description of work.—Filling up blanks in, and the maintenance of existing avenues was the principal work of the year.

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The nurseries have been replenished and well looked after. They will provide a large number of young trees suitable for planting on road-sides this year. In some of the mangoe nurseries which were covered with straw during the winter, much injury was done by field rats.

Encamping-grounds.—The mangoe plantations at encamping-grounds are in a generally thriving condition, and it is hoped they will soon begin to give some return for the money spent on them.

Financial results.—The following is a comparison of the financial results of the year under report with the preceding one :—

Source of Income.	1885-86.	1886-87.	Loss.	More.
	Rs.	Rs.	Rs.	Rs.
1. Gardens	1,934	2,333	...	399
2. Sale of dead trees ...	5,588	9,930	...	4,342
3. Thinnings	...	481	...	481
4. Lopping	1,654	1,726	...	72
5. Roadside grass ...	502	390	112	...
Total ...	9,678	14,860	112	5,294
		Net	increase ...	5,182
Expenses	7,404	7,625	...	221
Profit	2,274	7,235	...	4,961

Income from gardens.—The increase in the income from gardens is due to increased sale of plants and fruits. The grass in the district gardens was also sold for a good price to the Carabiniers.

Sale of dead trees.—There is a very marked increase in the income from the sale of dead trees. This is due to a great number of large trees having been blown down by storms, but it is also in a great measure due to good arrangements being made for the disposal of the trees, some of which have sold for as much as Rs. 25 each.

Loppings.—The income from sale of loppings is about the same as in the preceding. Pruning is rarely permitted now.

Thinnings.—It was found necessary to thin the avenues on two or three roads where the trees were very dense ; this was done by carefully weeding out the weakest and stunted trees and those which were obstructing the growth and development of others. These thinnings were sold for Rs. 481.

Sale of road-side grass.—The income from sale of road-sides grass has fallen off, and a further decrease may be expected in future years. The reason of this is that the District Board has strictly prohibited the grazing of cattle on road-sides and the scraping up of the grass with the native hoe or *khurpa,* and has only permitted the sale of the grass on the condition that it shall be cut with the sickle or *dantri.* The advantages that will result from this prohibition are two-fold, in the first place young plants will be less liable to injury from cattle and the grass will help to bind the earth of the berms and so lesson the cost of repairs.

DERAJAT DIVISION.

Remarks by Commissioner.

Bannu.—The progress of arboriculture in the Bannu District is not saistfactory. The fine avenues in existence were formed many years ago, but little success has attended subsequent operations in their proper maintenance and extension, though conditions, water and soil are favorable. In some parts of the district, such as the Mianwali sub-division, the Marwat upland and other similar tracts, where there is no water or only obtainable at a great depth or from a distance and the ground is hard, stony or sandy, the difficulties are naturally great, but even here indigenous trees and shrubs could be sown or where growing be protected ; no expenditure however is required in these localities till the more favourable ones are fully timbered. The establish-

ment of nurseries has not received much attention; at Nowrang, for instance, a dâk bungalow 15 miles from Bannu, there is a so-called garden; it has a well and running water is also available, and it could therefore be, with little trouble, stocked with any number of trees of all kinds including fruit-bearing ones; in the villages in the neighbourhood there are some good orchards.

The employment of an arboriculture overseer possessing some knowledge of the ordinary principles of the art, is a move in the right direction. For success, however, there must be a personal interest; trees will not grow by order or rule. It is useless expenditure planting shisham and other trees in localities where they cannot thrive.

Dera Ismail Khan.—Considering the character of the soil and climate of the Dera Ismail Khan District the Commissioner thinks very fair progress is made.

Muzaffargarh.—In Muzaffargarh, except in the Thal tracts, arboriculture presents little difficulty, soil being good and water near the surface.

Ber and jhand might be more extensively planted; they require little water and grow in the most arid tracts; the latter in some Thal tracts thrive very well, and would cover the country if not lopped and kept down by camels and goats. Both are fodder trees and the former gives a coarse fruit as well. In some parts Date trees would no doubt grow if sown during the rains; they are hardy; avenues would look well and the fruit be useful. Even in the most barren tracts, if the indigenous growth on the roadsides was protected, the bushes and trees would attain a respectable height and protect better kinds when sown.

15—MUZAFFARGARH DISTRICT.

Description of work.—Avenues.—During the three years under report 1,86,838 feet of road were planted out with trees of shisham and farash or tamarisk on both sides. Thus a length of 3,73,676 feet was planted with trees, mainly shisham. Ukaub or farash is only planted here and there where the soil is so bad as not to allow shisham trees to grow. On the whole the condition of the trees planted is good. The operations during these three years were carried out chiefly on roads— (1) Muzaffargarh to Aludewali in Muzaffargah tahsil and from Aludewali to Alipur in Alipur tahsil; (2) on the road from Muzaffargarh to Daeradinpanah; (3) on the road from Sanawan to Gujrat, and (4) on Railway Station roads.

The above will be seen from the following table:—

Name of road.	Muzaffargarh tahsil.	Alipur tahsil.	Sanawan tahsil.	Total.
	Feet.	Feet.	Feet.	Feet.
Muzaffargarh to Alipur	64,794	55,440	...	1,20,234
Ditto to Ahsanpur... ...	2,020	...	42,240	44,260
Sanawan to Gujrat	...	...	13,200	13,200
Railway Station roads	7,119	...	...	7,119
Taleri Garden to Khangarh road ...	1,000	...	...	1,000
Muzaffargarh to Rangpur	625	...	...	625
Station roads	400	...	...	400
Total ...	75,958	55,440	55,460	1,86,838

I.—Road from Muzaffargarh to Alipur.

The length of this road from Muzaffargarh to Alipur is 51 miles, but the trees are planted up to 54th mile towards Sitpur.

The trees on this road are in a very good condition. The soil from 18th to 20th miles proved an obstacle and farash could only be planted with success; leaving this, the road is planted on both sides with shisham trees as far as it is planted at all. Seven and a half miles of this road remain to be filled with trees, and this will be done by end of 1888-99. More than two hundred mangoe trees were planted in 1885-86 on this road near Khangarh; most of them died, but were replaced by Khangarh mangoe plants that are in good condition. Saifullah Khan of Khangarh afforded great help in their supervision and otherwise.

II.—Road from Muzaffargarh to Ahsanpur.

The soil on this road is of various kinds, 2,020 feet of road were planted out up to near railway line crossing it, and there is nothing but "tibbas" of sand between this and Mahmudkot. From Mahmudkot to Sanawan the soil is fair with "tibbas" of sand occurring here and there. The soil from Sanawan to Kotaddu is still better, with fewer

"tibbas" between. The part of the road between Kotaddu and Ahsanpur remains to be set out with trees.

The entire length of this road is 47 miles; out of this 34 miles of road have been planted with trees, including the sandy parts where no trees have been planted.

III.—Sanawan to Gujrat.

The length of this road is 13 miles. It was formerly a custom road and had a good line of trees one side. Gaps were filled up to the extent of 13,200 feet, and it is expected that the road will be entirely planted out with shisham trees during 1887-88 or 1888-89.

IV.—Railway Station roads.

These are two bits of road leading from Muzaffargarh town to Railway station. The entire length of 7,119 feet was filled up with shisham trees in 1885-86. The remaining three roads were filled up with trees where gaps occurred.

Groves.—There was ouly one new grove sown over an area of 1 acre 3 roods 36 poles near Rohillanwali in 1884-85.

From this trees were transplanted on the Alipur road, both in 185-86 and 1886-87.

The idea of having further plantations was abandoned as they were found comparatively of little use.

The present plantations are sufficient to plant trees on road.

Besides these 400 shisham cuttings were planted in Taleri, and 396 fruit trees besides. On Mithuwala well 100 shisham trees were planted. In the Church compound 26 Eucalyptus trees were planted; 400 shisham trees were planted in camping ground Kotaddu, and many have survived the attacks of grazing animals.

Income and expenditure.—The table given below will show the income and expenditure of the three years under report:—

Heads.	Expenditure or Income for												1883-84.		
	1884-85.			1885-86.			1886-87.			Total.					
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
Income.															
Taleri garden	214	0	0	341	8	8	433	7	9	1,016	0	5	328	3	6
Miscellaneous	257	4	11	...	...	...	...	...	...	257	4	11	90	7	11
Lopping &c.	633	9	1	487	6	6	828	13	0	1,949	12	7	134	6	1
	1,131	14	0	828	15	2	1,262	4	9	3,223	1	11	543	1	6
Expenditure.															
Contribution to A.-H. Gardens	120	0	0	120	0	0	120	0	0	360	0	0	240	0	0
Gardens &c.	3,316	2	1	2,374	3	7	2,813	4	6	8,503	10	2	2,016	14	0
Arboriculture &c.... ...	1,690	0	0	1,086	0	0	804	6	8	3,580	6	8	3,620	6	2
	5,116	2	1	3,580	3	7	3,737	11	2	12,444	0	10	5,877	4	2
Roadside trees, Part II ...	4,615	4	0	4,356	14	10	4,630	3	1	13,602	5	11	2,921	2	1
Grand total ...	9,741	6	1	7,937	2	5	8,367	14	3	26,046	6	9	8,798	6	3

A slight increase in the income of Taleri gardens, on account of competition between contractors and planting of new fruit trees.

Miscellaneous income Rs. 257-4-11 was the amount of price of trees felled in Taleri gardens credited in 1884-85.

Lopping was done more extensively iu 1886-87 than the previous years, but without any due supervision.

Expenditure.—Gardens.—The difference between the figures of three years is due to an embankment and repairs of the Bungalow in the Saleri gardens, Rs. 695 being spent on the bank and Rs. 95 on the Bungalow.

The establishment of the malis was reduced at the end of 1884-85. Thus Rs. 60 per mensem were more spent in 1884-85 on account of plantations.

This was reduced at the end of that year when the malis were dispensed with.

No remarks are required for expenditure concerning road-side trees.

Description of work.—Avenues.—During the year under report, road-side avenues were extended by 1½ miles, *i.e.* half a mile in the Dera Ghazi Khan and one mile in the Jampur tahsils—the road leading to Sheru being extended by half a mile and another additional mile being added between Jampur and Dera Ghazi Khan.

There would no doubt have been a good deal more to show in the way of extension of avenues in this year, but for the excessive heat during the setting season and scanty rainfall.

About 450 trees were planted on the extension of 1½ mile and about 1,500 to fill up gaps made by trees decaying or having been blown down by the prevailing high winds during the summer months.

These newly planted trees consisted of "shisham," "siris," "mangoes, "pipal" (ficus religiosa) and "eucalyptus." As reported in former years the shisham is about the only tree that is found to be "at home" in the soil of Dera Ghazi Khan, and yet this too needs careful watering until it has attained the height of about 8 or 10 feet, when little more tending is found to be necessary.

The "kikar" likewise is a very hardy tree, and as before remarked in previous years' reports, well adopted to the *kallari* soils of the district.

Groves.—The two mangoe groves, one on the Rajpur road (half way between Dera Ghazi Khan and Kot Chutta) and the other on the Batil road, are showing signs of better animation, and will, it is hoped, prove successful. While adverting to the growth and culture of mangoes, I cannot but remark that, when it is in view to augment groves by planting of mangoes the better or best descriptions of the seedling kind ought invariably to be set, as the care bestowed, if successful, would be far more satisfactory and even remunerative than those grown from an indiscriminate choosing of seed for the nursery.

Nurseries.—Of these there were 8 maintained during the year :—

3 on the Jampur section of the Rajanpur road ;
1 on the Sheru road ;
1 on the Sakhi Sarwar road ;
1 on the Dera Ismail Khan road ;
1 In the Katchery garden and
1 In the Government garden.

These nurseries are, as noted in the former years, maintained for the purpose of providing, for the most part, plants for road-side planting and are a great convenience to zamindars who are supplied with tree plants free of cost, and so encourage the spread of the growth of fruit-bearing trees.

Chhabri-kot-Haebat plantation.—Very little has been done towards extending the plantation this year, and it has been found almost impossible to canal irrigate more of the lands. This is the only means to render the soils of the district fertile by washing out the "kallar" or saline deposits.

Nurseries of fruit trees.—As in previous years these two nurseries have been maintained and are found indispensible. From them were distributed gratis to zamindars some 2,000 trees, the bulk of which were fruit trees—such as mangoes, peaches, limes, oranges, figs, vines and jamans. For the grafted peach there is always a very great demand, as this class of fruit trees suffers much from the extremes of climate and is evidently not suited to the soil of this district.

Trees in Station gardens.
(*a*) Katcherry and Government gardens.

The gardens at Buzkushi and Khar are doing well and it is anticipated that each successive year will develope improvement of the number and variety of the different fruit trees planted there—more especially of the *imported* descriptions. Large numbers of trees are being planted out from these gardens on the Fort Munro hill, including the Lombardy poplar, eucalyptus, carob, almond, apricot and mulberry, which are found to succeed best.

(*b*) Gardens at Fort Munro.

Expenditure.—The expenditure from all sources (Municipal, District and Provincial) on arboriculture proper, and maintenance of gardens and road-side avenues, amounted to Rs. 8,442 as against Rs. 7,260 of the previous year.

Statements as prescribed are duly submitted.

General remarks.—The work of the year has been on the whole satisfactory, the more so when the fact is taken into consideration that many orchards are springing up in all directions, proving that the advantages that are to be derived from the collected growth of umbrageous fruit trees are beginning to be understood by the people.

Every effort will be made to introduce and naturalize hardy species of trees that will thrive in a dry and rocky country such as Fort Munro, and it is to be hoped that these efforts, if successful, will provide a means for the future spread of arboriculture on the sides of the ever bare Suleman Hills.

The contribution from Provincial Funds of Rs. 72 per mensem for arboricultural operations along the Dera Ismail Khan and Mithankot roads has been removed from the Budget for the current year. It is hoped that next year this amount may be again allowed as in previous years. Or otherwise it will be necessary to stop tree-planting along this, the main road of the district, altogether.

27.—DERA ISMAIL KHAN.

General remarks.—The average rainfall in this District during the past three year was as follows:—

		Inclus.
Dera	...	7·8
Kulachi	...	5·4
Bhakar	...	8·7
Leiah	...	10·3
Tank	...	6·3

Description of work.—Avenues.—The following table shows the length of single lines planted on the roads during the past three years :—

Name of road.	Length of lines planted with trees.				Length of line on which trees were destroyed.				Length of line stocked with trees.
	1884-85.	1885-86.	1886-87.	Total.	1884-85.	1885-86.	1886-87.	Total.	
Dera and Tank ...	3,487	2,660	10,500	16,647	600	900	...	1,500	15,147
Leiah and Kalur ...	15,840	2,000	244	18,084	5,280	1,000	...	6,280	11,804
Bhakkar and Jhang ...	1,026	1,000	1,804	3,830	257	400	10,967	11,624	...

Dera and Tank.—The length of this road is 44 miles or 2,32,320 feet. Of this a length of 16,647 was planted during the year under report and the two previous years. The trees now stocked on the remaining length, *viz.* 15,147, are in a flourishing state owing to the ample supply of water on this part of the road.

Leiah and Kalur.—A length of 18,084 feet was planted, of which a number of trees died on a length of 6,280 feet; the remaining trees are doing well.

Bhakkar and Jhang road.—The length of this road is 44 miles, but owing to a continued drought in the Thal (Cis-Indus) a large number of trees died.

Species of trees.—The species of trees suited to the District and planted on the roads are chiefly tamarisk and kikar.

Groves.— The area stocked with trees or plants is 8 acres.

Financial results.—The following table shows the result of arboricultural operations in this District for the past three years:—

	Income.				Expenditure.				Total.
	1884-85.	1885-86.	1886-87.	Total.		1884-85.	1885-86.	1886-87.	
	Rs.	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	Rs.
Avenues ...	61	...	...	61	Avenues,	154	...	...	1,894
Avenues and groves ...	...	385	...	385	Estabt.	1,740	...	...	
Ditto ...	...	...	81	81	Do.	...	1,458	...	1,458
					Do.	...	...	2,416	2,416
				527					5,768

Establishment.—The establishment consists of 1 darogha, 1 mali and several beldars. Supervision is carried on under the immediate control of the Deputy Commissioner; the Tahsildars exercising the necessary supervision in their Ilaquas.

The lopping of trees is carried out by the permanent establishment assisted by hired labour.

Station garden.—There is a Municipal garden outside the town and within an easy distance of the Government Katchery and Civil lines.

BANNU DIVISION.

28.—BANNU DISTRICT.

General remarks.—The year has been unfavourable to tree-planting in Marwat tahsil and in the rest of the district, although water is generally procurable, yet the dryness of the winter has doubtless encouraged many of the zamindars to appropriate more of the Government water than they otherwise would have done, and thus many young plants have suffered. However, by supplying malis at a distance from running water with mashaks, by adapting some system of responsibility from the adjacent proprietors, and by regularly prosecuting offenders, the District Committee believe that in most parts of the more favored tahsils there should be no difficulty in the preservation of young trees even in dry years.

By far the larger part of the arboriculture in the district is carried on in the immediate neighbourhood of Edwardesabad, and there are some fine avenues radiating from the city, but now that all the more favorable sites for planting are occupied, the work progresses with less energy and success. Both mulberry and shisham trees are easily obtained in the neighbourhood, and the nursery at Nowrang is now chiefly useful as a ground for a few extraneous trees and for experiments. Several new seeds are being tried at present, but as the attempts are not in any way scientifically carried on, they do not promise any great success. The establishment of nurseries being a point strongly insisted on in the report of the Committee which met in Lahore last April, the District Committee hope to start one or two in the course of the next year. A nursery at Gandi Khan Kheyl on the Gambila road will be a useful centre for operations on the important and at present treeless road to Dera Ismail Khan. The road to Laki from Nowrang which for fully six miles is as finely wooded as would be desired, becomes absolutely bare on reaching the sandy soil of the Gambila valley : but it is hoped that both here and on the Pezu road the careful planting of gum trees may be ultimately rewarded. Two large gaps in the road between Bannu and Nowrung have hitherto defied cultivation : but there is hope that attention to the instructions furnished by the arboriculture Committee may lead to greater success.

Establishment.—The establishment was increased by 6 malis (representing Rs. 360 per annum) on the 1st of April last, and now consists of a jamadar on Rs. 20 per mensem and 27 malis paid from District funds, of whom one gets Rs. 7, one Rs. 6, and the rest Rs. 5. The Public Works Department add seven malis on Rs. 5. There is also a gardener in charge of the Nowrung nursery.

Income.—The main income of the arboriculture proper of the district is derived from the fruits of the public gardens, &c., but the actual avenues and nurseries yield very little. By a considerable thinning of the tress the District Committee may hope this winter not only to improve the avenues themselves, but to prevent a considerable sum under the earlier division of Column III in the Income statement. The expenditure proper, exclusive of establishment, has been mainly employed on the construction of "burjes" which have been mainly successful in the immediate neighbourhood of the city.

I have given orders for the discharge of the present jamadar who has no qualification for the work, and am about to make arrangements to send to the Forest school at Dehra Doon a young man of this district, chosen after consultation with the leading Bammchi and Marwat Raises. Preference will be given to a man of the zamindar class, able to read and write and knowing Pashtu. A schalarship of Rs. 10 per mensem will be given to him, and on completing a 6 months course of instruction he will be appointed jamadar. At present much mischief is done to existing trees by ignorant and ruthless lopping and pruning, and the work should be under the eye of an active man able to devote his whole time to it and acquainted with the rudiments of the practical part of forestry

PESHAWAR DIVISION.

29.—PESHAWAR DISTRICT.

General remarks.—There has been nothing particular to record in the three years under report affecting arboriculture.

29,697 trees of various description were planted throughout the district at a cost of Rs. 13,592, as per the following detail :—

Road-side trees.

					Rs.	
1 jamadar	@ Rs. 10 per mensem		...	...	360	
1 mali	@ „ 8 „		...	...	288	
2 „	@ „ 7 „	each	...	...	504	
28 „	@ „ 5 „	„	...	...	4,963	
1 „	@ „ 4 „	„	...	...	144	
Feed of Bullocks	„	„	...	...	432	
New plantation on Gujar Gori road			...	...	200	
Land for nursery			...	...	40	
					——	6,931

Ornamental Gardens.

				Rs.	
1 jamadar	@ Rs. 15	per mensem for 24 months	...	360	
3 malies	@ „ 8	„ each	... ...	548	
8 „	@ „ 7	„ „	... ...	1,333	
12 „	@ „ 6	„ „	... ...	1,714	
8 „	@ „ 5	„ „	... ...	960	
1 „	@ „	5 for 3½ months	... ...	17	
1 „	@ „	4 do.	... ...	14	
1 „	@ „	3 for 17 months	... ...	51	
2 „	@ „	2 each for 7 months	... ...	28	
1 „	@ „	2 for a month	... ...	2	
Contingencies			... ...	1,634	
					6,661
		GRAND TOTAL	...		13,592

I am endeavouring to do away gradually with the system, so dear to Tahsildars, of planting road-side trees without roots and leaving them without protection, the only advantage of which is that it shows a large number of trees in the annual returns as having been planted during the year. Unless trees are carefully planted, protected and watered for two or three years, they are of no use. This of course causes increased expenditure, but I consider it better to plant and protect one mile well than ten miles carelessly. Captain Deane, Assistant Commissioner of Mardan, has shown great energy in his Sub-Division, and has within the last year planted several miles with road-side trees in the vicinity of Mardan.

Fodder trees are not grown in this District.

32.—HAZARA DISTRICT.

Description of work.—Avenues.—During the three years under report no new avenues have been planted except in the Haripur Tahsil, the work on avenues has been merely the filling up of gaps in existing avenues.

Groves.—Sarban.—No new groves have been planted except some 5 acres of hill waste with the permission of the owners on the Sarban hill above the station of Abbottabad, on which trees were transplanted from existing nurseries.

Sultanpur.—At Sultanpur some 20 poles of land covered with an overgrown nursery trees has been cleared as the wants of the people can be met from Abbottabad as easily, with less expense to the District Fund.

Nurseries.—Work in the nurseries has been steadily carried on, young trees being distributed as they were fit for transplanting.

Income and Expenditure.—Statements for 1884-85, 1885-86 have already been submitted in those years, and it is not necessary to repeat them again.

				Rs.
District Funds, Income	...	...	...	153
Expenditure	...	...	...	760
		Deficit	...	610
Municipal Funds, Income	...	...	...	1,583
Expenditure		...	...	409
		Surplus	...	1,444

This will show that the funds at the disposal of the District Board are quite inadequate to the wants of the District.

Establishment.—District Fund establishment was the following :—

				Rs.
1 head mali @ Rs. 5	...	...	...	60
1 mali @ Rs. 6	...	...	...	72
1 mali nursery @ Rs. 7	...	...	...	84
1 „ Thorburn Rakh @ Rs. 6		...	...	63
2 watchers Civil Kakh @ Rs. 5		...	...	120
2 malis Mansehra and Shinkiari @ Rs. 5			...	120
Contingencies	...	...	...	244
		TOTAL	...	763

and Municipal 4 malis and contingencies = Rs. 409.

Fodder trees.—In this District no trees are planted for fodder ; but all mulberry trees, specially in the Haripur Tahsil, are lopped to provide fodder for cattle, but mulberry trees are not specially planted for this purpose. The wild brushwood on the hill-sides is much

used for fodder for camels and buffaloes, but little if any is fed to milch-cows or plough cattle.

Financial results.—As the whole of the ready made avenues were long ago transferred to the Public Works Department, the Local Funds have no opportunity of re-couping themselves from the expenditure incurred thereon. Their income is only from trees of more recent date.

33.—KOHAT DISTRICT.

General remarks.—Rainfall.—The following table shows the rainfall for each of the last three years (1884-85 to 1886-87) as compared with the average fall of rain for past years as reported by the Meteorological Reporter to the Government of India, and attached to Circular No. 6A, dated 20th September 1883, from the Commissioner of Settlements and Agriculture Punjab.

	1884-85.	1885-86.	1886-87.	*Average for former years.*
Total ...	18·05	26·46	10·57	19·66

The rainfall for the year 1884-85 was about the average and for the year 1885-86 it was much above the average, but it was somewhat unequally distributed.

There was excessive rainfall during April and May 1885 which proved injurious to plantation. The rains were, however, sufficient during the subsequent months of the year. There was some rain during the first part of the year 1886-78, but the later half was one of prolonged drought in common with the whole Province.

This, however, did not much affect the plantation of trees in avenues of roads in charge of District Committee, as they are watered from the Toi and other streams.

Plantation of fodder trees.—Mortalilty to cattle from decrease of pasturage in consequence of drought has been a thing almost unknown in the District, as it is a hilly District which contains good waste lands available for grazing grounds. Nothing has therefore been done towards planting of trees for fodder.

The year 1886-87 has, however, been of a most exceptional character, when heavy mortality has been reported amongst cattle from scarcity of fodder in villages mostly dependent on rain for the irrigation of their lands.

Systematic working plan for District arboriculture in the Kohat District.—With reference to para 6 of the proceedings of His Honor the Lieutenant-Governor, Punjab, on the Arboricultural Report for 1883-84, the question of systematic working of arboriculture in the District was laid before the District Committee and the following scheme was drawn up, a copy of which was submitted to the Commissoner under cover of this Office No. 557-2824, dated 24th December 1884.

"Commissioner's Circular No. 219, dated 25th November 1884, laid before the Committee."

The circumstances of the District are unfavorable to arboriculture.

The planting of trees on the main line of roads, *viz.*—

Kohat to Khushalgarh,
Ditto Hanghu and Thull,
Ditto Bannu,

is under the charge of the Public Works Department. The funds at the disposal of the District Committee are too small to allot any large amount for arboriculture. The promotion of arboriculture in the forest tract of Khwara and Zira, need not be referred to here, as the condition of these forests has formed the subject of a separate reference.

The Khallak Ilaqa gets so little water that it would be useless to expend money there on arboriculture.

In places like Hangu there is no necessity for any elaborate system of arboriculture, as where a suitable place can be found trees are planted by the people themselves. The only places where any improvement could he made with the small sum of money at the disposal of the Distirct Committee, are Kohat and its neighbourhood, and this is the only tract to which the District Committee could direct any attention. The localities selected by the Committee are—

1. The maintenance of the Circular road.
2. The Jarwanda Road.
3. The road leading from the tahsil gate to the Hangu road by the Police lines.
4. An avenue near the Police lines.
5. The road leading to the District Kutchery.
6. Kharmatu and Dhoda road, 7 miles.
7. Shekhan road, 3 miles.

8. Bowana road 1½ mile.

9. Grove in Jarwanda 2 kanal.

Shisham and mulberry are the species that thrive best in the District.

The District Committee will direct its attention to the plantation of the Jarwanda road.

The present establishment consists of—

		Rs.
3 rangers @ Rs. 5 each	=	15
2 bhishtis, 1 @ Rs. 6 and 1 @ Rs. 5 ...	=	11
TOTAL Rs. ...		26 × 12 = 312

The Committee would increase the establishment by two rangers and 1 bhishti, costing Rs. 180 a year, or total Rs. 492. The allotment is Rs. 500 ; with this establishment the works enumerated above will be gradually taken in hand.

The members of the Committee will try to interest the zamindars in this matter.

Description of work—Avenues.—The following statement will show the progress made during the past three years in planting trees in avenues of the roads is charge of District Commoittee :—

Name of Road.	No. of trees on 31st March 1884.	Planted during the three years 1884-85 to 1886-87.				Died.	Remaining on 31st March 1887.	SPECIES OF TREES.
		1886-85.	1885-86.	1886-87.	Total.			
Circular Road ...	152	690	495	427	1,612	999	765	Mulberry, "shishm" willow, battang, hulyar, (bachnar).
Jarwanda Road ...	...	60	...	1,567	1,127	201	1,426	Banian, mulberry, willow, shisham, bakain, bedmushk, battang.

The work done on the *circular road* consists chiefly of filling gaps and blanks in avenues and preservation of trees previously planted. A good many of the trees died on this road owing to the excessive rains which lasted from end of March to end of May 1885. The soil of this road is not good and the mulberry trees do not grow well on it, but the gum trees are thriving and promise well.

Jarwanda road.—This is a new road which was selected by the District Committee for plantation.

In 1884-85 60 willow trees were planted as an experimental measure, none of which died.

In 1886-87, however, a good number of trees (*viz.* 1,567) were planted, of which 1,366 or 87 per cent. have been successful. These plants were mostly taken from Ghulam Haidar Khan Kyani's and Municipal gardens, and some plants of shisham were taken from the nurseries on the circular road.

Nurseries.—There are two small nurseries containing shisham, mulberry, sarin, bakain and "kachnar" trees on the circular road. They supply plants in alternate years for this road as well as the Jarwanda road, but the supply is insufficient and the plants for these roads are sometimes procured from the Municipal garden and elsewhere.

Establishment and supervision.—The following is the strength of establishment maintained and the expenditure incurred by the District Committee during each of the last three year :—

1884-85.

		Rs.	A.	P.	
Head mali for 4 months @ Rs. 10 per mensem	=	40	0	0	per annum.
3 malis @ Rs. 5 each = 15 „	=	180	0	0	„
2 bhishtis, 1 @ Rs. 6 and 1 @ 5=11 „	=	132	0	0	„
Miscellaneous planting		128	11	3	
TOTAL ...		480	11	3	

1885-86.

3 malis @ Rs. 5 each = 15 ... per mensem	=	180	0	0	per annumn.
2 bhishtis, 1 @ Rs. 6 and 1 @ Rs. 5=11 „	=	132	0	0	„
TOTAL ...		312	0	0	

1886-87.

			Rs.	A.	P.	
4 malis @ Rs. 5 each =20	...	per mensem =	240	0	0	per annum.
1 bhishti @ Rs. 6	...	... „ =	72	0	0	„
		Total ...	312	0	0	
		Fines &c. ...	5	6	0	
			317	6	0	

Up to the end of the year 1885-86 3 malis and 1 bhishti were employed on the circular road and 1 bhishti at Khushalgarh to look after the grove in the Dâk Bungalow. In 1886-87 the services of the bhishti on the circular road were dispensed with and a malì was employed in his place, making in all 4 malis : 2 of these have been employed on the circular road and 2 on the Jarwanda road.

Ornamental garden.—There is a flourishing Municipal garden at Kohat which has been well looked after by the head clerk of the district office, and is now greatly improving under the supervision of Lieutenant McMahon, Assistant Commissioner.

It is being gradually filled up with good varieties of fruit trees from Lahore, and it is intended to encourage bamboos which are good for purposes of shade and will yield an income.

The following statement shows the receipts and expenditure on account of the garden during each of the last three years:—

Year.	Receipts.			Expenditure.									Deficit.		
				Pay of Establishment.			Miscellaneous Charges.			Total.					
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
1884-85	279	8	0	326	0	0	262	13	6	588	13	6	309	5	6
1885-86	265	0	0	344	12	6	57	3	6	402	0	0	137	0	0
1886-87	462	2	6	379	9	11	203	9	1	583	3	0	121	0	6

The deficit is gradually decreasing, and there is every reason to expect that this garden will soon become self-supporting.

I observe that the proposal of the District Committee to increase the establishment (*vide* para 4 above) has not yet been carried out, and I am inclined to think that it is better to keep on the old establishment and leave a margin for contingencies. A small addition to very small establishment cannot be productive of much good.

The following table will show the amounts sanctioned in the District Fund Budgets and the expenditure iucurred for the last three years :—

Year.	Amount sanctioned.	Amount spent.		
	Rs.	Rs.	A.	P.
1884-85	500	480	11	3
1885-86	392	312	0	0
1886-87	400	306	9	11

From this it will be seen that for the last two years, the full amount of Rs. 500 (as promised by the District Committee in their minute for December 1884, mentioned above) was not provided in the Budgets, and the amounts sanctioned were not fully spent. I have new ordered the matter to be brought before the next District Committee with a view to considering the matter. It is proposed to add the following roads to those being planted as opportunity offers :—

(1) The road leading to Mir Kheweli from Tahsil gate to bank of Toi, about ½ mile.

(2) The road leading to Bar from Tahsil gate to Gari Mowaz Khan.
(3) The short road from Tahsil gate to meet Hangu road, near the Jail garden.
(4) Tappi and Bahadur Kot road.

WESTERN JAMNA CANAL, HANSI DIVISION.

Statistics.—The figured statements in the prescribed forms for 1884-85 and 1885-86 have been submitted previously, and for 1886-87 are herewith forwarded, showing work done during the year.

Financial results.—The proceeds from the canal plantations during the 3 years under review show a total of receipts as under :—

1884-85	...	Rs.	7,560
1885-86	...	„	9,189
1886-87	...	„	6,145=22,894.

The falling off, in receipts for 1886-87 is due to the whole of the timber used on the moveable platform bridges, Hansi canal, not having been credited to that head till April 1887.

The expenditure on the canal plantation has been :—

1884-85	...	Rs.	2,602
1885-86	...	„	2,205
1886-87	...	„	2,338
	Total	Rs.	7,145

The comparison of the above figures shows a net surplus income of Rs. 15,749.

Description of work done.—During the past 3 years certain portions of the canal berms were sown with seeds, and gaps in avenues were filled up. On the whole the plantations on he canal berms were not very successful.

Two roods of land were planted in the canal chowki compound at Hissar during 1886-87, but owing to the depredations of the whiteants these trees were nearly all destroyed. The plantation of fruit trees at Hansi was destroyed by the heavy rain in the monsoon of 1885, the land became water-logged and only a few of the gum trees survived.

The plantation of grafted mangoe at Jhind is flourishing.

The seeds of the katang bamboo proved fairly successful and the young plants planted out are flourishing.

The grazing of canal banks, where plantation operations are not in progress, has been successful in keeping down the growth of high grass and jungle.

The gaps in the avenues have been filled up with young trees and has been fairly successful.

Receipts.—There has been a large number of shisham trees felled on the lower portion of canal for the construction of the Platform bridges ; these trees were of full growth. The receipts owing to the completion of these bridges will probably show a falling off as there will be no large demand for timber.

Table showing number of trees at the close of the year 1886-87.

*	NUMBER OF TREES.															Total by Classes.			Total.	Bamboo Clumps.
	Shisham.			Kikar.			Tun.			Mangoe.			Others.							
	Classes.			Classes.			Classes.			Classes.			Classes.							
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3		
Balla Canal ...	120	122	57	17	18	18	182	16	11	1	1	3	305	496	574	625	653	663	1,941	...
Hansi „ ...	2,798	10,366	8,675	1,878	7,836	8,360	93	562	429	4	29	5	2,565	9,031	14,114	7,338	27,824	31,583	66,745	2
Darba Branch ...	311	1,469	1,970	106	797	1,596	...	...	3	...	...	...	18	92	1,054	435	2,358	4,623	7,416	...
Bahadra „ ...	1,147	3,898	2,543	86	850	3,042	...	3	5	...	...	...	104	421	6,079	1,337	5,172	11,669	18,178	...
Butana Canal ...	99	770	720	184	1,192	514	420	1,391	299	2	14	10	351	1,991	1,674	1,056	5,358	3,217	9,631	...
Right Fork ...	36	409	281	20	147	171	11	25	13	...	1	...	210	619	506	277	1,201	971	2,449	...
Left „ ...	90	1,593	1,236	32	164	179	29	65	35	3	58	53	309	1,998	2,183	463	3,878	3,686	8,027	...
Total ...	4,601	18,627	15,482	2,323	11,004	13,880	735	2,062	795	10	103	71	3,862	14,648	26,184	11,531	46,444	56,412	1,14,387	2

Last year ...	1,16,526
Decrease ...	2,139*

* Decrease due to trees blown down and trees used for works.

KARNAL DIVISION, WESTERN JAMNA CANAL.

General remarks.—This appears to be the first occasion on which a tri-ennial report has had to be submitted by this Division.

It is prepared in accordance with No. 6165, dated 7th October 1884, of Officiating Junior Secretary to Government Punjab, to the Secretary to Government of India.

It appeared to be the object of His Honor the Lieutenant-Governor that the work of his officers should be reduced, and that these returns should be lessened. The result of the arrangement is, however, to add one more report to those already submitted.

The inconvenience of drafting a tri-ennial report is obvious where the officers, who have been formerly in charge of the Division, have left without leaving any narrative record of the progress made by them for each year.

In the Karnal and Umballa parts of the Western Jamna Canal many trees grow spontaneously with facility, and but little active operations are necessary.

Description of work.—In 1884-85 nothing appears to have been done towards extending the plantations.

Likewise in 1885-86 no extensions were noted, but the usual operations of maintenance, clearances and felling proceeded.

In 1886-87 the present Executive Engineer made a start towards planting out the New Main line, by laying out plantations above Jani and Munak. The latter was fenced in and the former will be.—Shisham trees were transplanted from nurseries in this place.

Avenues were planted out at Dadupur and Munak. A new mangoe garden of the Bombay variety, area 2 acres, was planted out at Dadupur. The garden there sells annually at an average of about Rs. 500, which is far more than its cost to maintain.

The spoil banks of the New Main line were sown with kikar originally. They have advanced well, but many appear to dry up. It is said that the roots are attacked by rats, which cause dessication.

The parts in embankments have yet to be planted, but in many places the trees grow spontaneously.

The spoil of Main drain No. 2 from Babail to Chhajpur was thrown up last year but not sown or planted. It is now bearing a dense growth of young kikar trees which average 5 or 6 feet in height.

A large undertaking was that of clearing and felling all trees on the mill channel at Karnal which were fit for timber or fuel. Small trees and those of a choice nature were left which will grow up and re-emboise the banks.

The old Main line canal having been shut off in 1885 is lined with many fine trees. Some of these were cut for works, and others are fit for felling. The Canal Department cannot now exert a very efficient supervision over these outlying parts. It may be desirable to transfer them to the care of the District officials.

The cost, count of trees, and other statistics are entered on the accompanying statements.

The report has been delayed owning to failure of the 2nd Sub-Divisional officer to submit his counts and returns punctually.

Karnal Division, Western Jamna Canal.—Table V. A.—Number of trees at the close of the year 1886-87.

Localities.	Number of trees.															Total.			Grand Total.	Bamboos in clamps.	Area of small plantations acres.
	Sissu.			*Kikar.*			*Tun.*			*Mangoes.*			*Other kinds.*			Class.					
	Class.			Class.			Class.			Class.			Class.								
	1st.	2nd.	3rd.	1st.	2nd.	3rd.	1st.	2nd.	3rd.	1st.	2nd.	3rd.	1st.	2nd.	3rd.	1st.	2nd.	3rd.			
1st Sub-division.																					
Hathnikund to Dadupur	...	40	242	...	...	26	1	7	31	...	1	8	10	77	120	11	125	427	567	...	...
2nd Sub-division.																					
Old canal	792	1,776	1,465	519	4,908	27,734	61	192	259	9	56	15	895	2,837	5,620	2,276	9,769	35,093	47,138	20	59·876
New main line	...	116 0	42,530	...	9	1,345	...	...	...	11	39	30	1	19	142	12	1,227	44,047	45,286	...	73·157
Distributaries	6	51	410	6	328	2,685	6	18	130	12	18	7	63	173	2,729	93	588	5,961	6,642	...	...
Escape...	...	2	60	16	330	1,711	1	5	11	...	1	...	...	11	97	17	349	1,879	2,245	...	...
Indri cut	83	833	253	184	2,243	12,450	1	7	11	9	3	1	101	360	563	378	3,446	13,278	17,102	...	...
Separate plantations...	3	60	42	5	72	283	...	2	...	10	101	31	32	51	44	50	286	400	736	...	...
Total ...	884	3,8 2	44,760	730	7,890	46,208	69	224	411	51	218	84	1,092	3,451	9,195	2,826	15,665	1,00,658	1,19,149	20	133·033
Grand Total ...	884	3,922	45,002	730	7,890	46,234	70	231	442	51	219	92	1,102	3,528	9,315	2,837	15,790	1,01,085	1,19,712	20	133·033 Acres.

UPPER SUTLEJ CANAL DIVISION.

General remarks.—The rainfall for the years 1885-86 and 1886-87 has been much under the average, though in 1886-87 there was a decided improvement over the preceding year. In 1884-85 the rainfall may be said to have been good. The table subjoined has been prepared from the District reports for the Dipalpur tahsil and is generally true for the whole Division.

District.	Raingauge.	During year.	Inches.	Average inches.
Montgomery	Dipalpur ...	1886-87	7·60	8·30
		1885-86	5·00	
		1884-85	12·20	

The indigenous trees of the tract are jhand, farsh, karil and beri, and are little more than bushes at the best. Around the wells kikar and pipal are to be found ; along the road-sides kikar and siris where there are water-courses. Similarly along the canal banks kikar, siris, with a few shisham trees exist and form the avenues which are detailed in the tabular report. Little has been done to planting out trees, excepting in the chouki compounds, from the fact that these canals being only in flow in the hot weather a supply of water cannot conveniently be obtained during the cold weather months, and at any time would always cost a great deal in the application, as there is no flow irrigation close to the canal banks. But in such a dry tract any kind of tree is acceptable, and it is fortunate that there is a spontaneous growth along the canals and water-courses which give a relief to the eye and a desirable shade for cattle.

Description of work done.—As may be inferred from the above paragraph, the work undertaken is mostly that of planting and maintaining the chouki compounds. The dead trees and windfalls on canal banks have to be removed, but this is mostly done by the people who buy them. Such wood is not of much value, though latterly Rs. 2 a hundred cubic feet of stacked timber has been given willingly by purchasers who have done the cutting, and stacking at their own cost.

The year under review has seen the completion of the choukies of the Lower Sohag and Para Canal, and this accounts for the extension reported under groves.

Establishment and supervision.—The work is looked after by the Engineering members of the Establishment. Malis are entertained at some of the canal choukis, and for the rest coolies are employed when required.

Financial results.—In 1885-86 there was a dearth of fodder. The zamindars were allowed to lop the kikar trees lining the canal banks, and a good sum was realized in this way, though no attempt was made to secure the best prices available. On the contrary it was carefully arranged that no sub-selling of the leases should take place, and that only those should be allowed to purchase the several lots whose village lands were adjoining them, and that the prices paid were distributed evenly amongst the villagers in each case. In this way a fair income was realized, and the zamindars materially benefited. The trees survive the lopping and appear to be none the worse for it. There were restrictions as to the size of boughs that were to be cut, and in all cases the zamindars observed these restrictions in a very satisfactory manner. Last year no loppings were sold, but the income has been raised, principally, from sales of fallen and dead trees. The legitimate income of the Division is deriviable from sales of grass, but there is yet much to be done in getting rid of dead trees. A statement is subjoined giving the income and surplus over expenditure for each of the three years under report :—

Years.	Income.			Surplus expenditure.
	Lopping.	Dead trees.	Grass.	
1886-87 ...	...	1,175	2,637	2,755
1885-86 ...	2,632	291	1,438	3,487
1884-85 ...	...	998	3,635	2,914

There was not the usual growth of grass on the Canal banks and rajbahas in the last two years owing to deficient rainfall.

WESTERN JUMMNA CANAL, DELHI DIVISION.

This tri-ennial report is submitted under Punjab Government Circular No. 552, dated 16th December 1884, on the arboricultural operations of the Division and contains brief descriptions of what has been done during the years 1884-85, 1885-86 and 1886-87.

Description of work.—Gangatoli garden.—During the year 1884-85, 40 plants of grafted mangoes, 40 orange plants and 10 plantain plants were planted in this garden. Of these 7 plantain plants died and the remainder were doing well.

In 1885-86 a large number of grafts have been in preparation here. Some were planted out to fill gaps in the same garden. These all failed as the whole compound was drowned during the rains and lay under two feet of water. This proved too much for the young trees, though the old ones were not damaged. During the year 1886-87 at Gangatoli a good deal of grafting from the existing mangoe have been in progress. Young plants have been sent to Serai Rohilla Khan and Siraspur choukis and a number reserved for planting out in vacant spaces in the Gangatoli next rain.

Siraspur New Chouki.—In 1884-85, 100 plants of country mangoes were planted, but with the exception of 30 plants which were doing well, all others were destroyed by whiteants. Susoo seedlings, about 100 in number, and 3 Banyan plants were also transplanted.

During 1885-86 a number of young mangoes were planted also at this chouki.

During 1886-87, 36 mangoes trees from Gangatoli have been planted out and the plantation has been fenced.

3 Banyan trees have also been planted as shade-trees.

New Delhi Branch.—During 1884-85, kikar seed was sown on New Delhi Branch in places on patrol bank between Jua and Kakroi. It sprouted very scantily and low kikar bushes were seen here and there.

During 1885-86, 25 acres of spoil have been ploughed, roughly levelled, and sown with shisham, also arrangements were made for watering the same from the canal and Ahulana rajbaha.

During 1886-87, in 1st Sub-Division on New Delhi Branch banks, the plantations planted out have been very successful where outlets and means of irrigating existed, shisham and kikar have come up very thickly ; where however no means for irrigating were provided the plants failed entirely, nothing whatever resulting from the seed sown. Out of the total area sown only some 6 acres were unprovided with outlets, and as it was only in these plots that the sowings failed, the plantations can be said to have been fairly successful. In the 2nd Sub-Division no trees have been planted out along the canal. Before the opening of the New Delhi Branch below Jua, an estimate was sanctioned for kikar plantations along the spoil of the new canal, but this was afterwards cancelled by order of Superintending Engineer owing to no funds being available.

Gangatoli Rajbaha.—During 1884-85 on the right bank of this Rajbaha from head 16,000 feet a reach of 8,000 feet was planted with shisham, tun, jamua, nim and siris trees 25 feet apart from each other, of these half the number of trees planted died. Further on the same bank a length of 6,400 feet was sown with kikar in ditches, but it did not sprout. On the Mughalpur minor a length of 7,000 feet, trees were planted on 2,500 feet on right bank. During 1885-86 and 1886-87 the trees planted out were maintained.

Rohtak Rajbaha.—During 1884-85 a few grafted mangoe plants were transplanted in Saragthal chouki garden.

On the Rajbaha banks in the spring, mulberry, &c., were planted in an avenue 1½ mils long, and in another length of 3 miles kikar seed was sown in trenches.

In the rains trees were again planted on a length of ½ a mile and more kikar seed wae sown in shallow trenches on a length of 4 miles along the right bank of the Rajbaha. The results were generally favourable. New nurseries were also laid out.

During 1885-86 no new trees were planted out, but the existing trees were looked after. The trees in the Saragthal compound have been tended. The young Bombay trees have commenced bearing. A few mangoe grafts from this garden have been planted in the Bhainswal Bungalow compound.

During 1886-87 the trees were maintained and no new trees planted out.

Gohana Rajbaha.—During 1884-85 the older plants were properly tended and a large number of new ones added.

During 1885-86 no new trees were planted, but existing trees were protected and kept pruned and trimmed.

During the year 1886-87 more trees were planted out, and a considerable number of self-sown trees sprung up.

Madloda Rajbaha.—During 1884-85 a new plantation was started.

In 1885-86 a number of young trees were planted out and those previously planted were protected as far as possible.

In 1886-87 more trees were planted.

Israna Rajbaha.— During 1884-85 the young plants of former years were properly tended and a large number of new ones added.

In 1885-86 the compound of the Israna chouki was almost devoid of trees ; here a good deal has been done. The ground has been ploughed, roughly levelled, and a small channel dug for irrigation purposes. The few existing trees have been looked after, and a fresh nursery sown with shisham. An experimental plot of bamboos was sown.

The guinea grass sown has been transplanted; a line of shisham was also planted out along the main line of the rajbaha from the compound nursery. During 1886-87 more trees were sown.

Ahulan Rajbaha.—During 1884-85 new plantations were started.

During 1885-86 a few trees were planted out along the Rajbaha and a small nursery of shisham was sown at the Naraina compound, also a plot of bamboos.

During 1886-87 more trees were planted.

Chouki compounds.—During 1886-87 in the chouki compounds where young trees planted in previous years had grown up very thickly ; a considerable number have had to be rooted up.

The rainfall during the year 1886-87 has been somewhat smaller than the previous years 1885-86.

The number of different species of trees counted at the close of the years under report is as follows :—

	1886-87.	1885-86.	1884-85.
Shisham	21,272	25,462	30,776
Tun	3,608	3,912	4,412
Kikar	41,885	44,284	51,675
Mangoes	2,520	2,322	5,355
Miscellaneous	50,503	55,979	55,362
TOTAL ...	1,19,788	1,31,959	1,47,580

The total length of both banks of new Delhi Branch, new distributories, &c., is 1,277, 92 miles as per detail in the statement of avenues attached to this report, which also shows how many miles are already planted with different species of trees, and how many miles are still available for plaantation. The length of single line of avenues planted out during the year 1886-87 was 3,605,790 feet, and the length of avenues on which plantation has failed or on which trees or established plants have been destroyed was 20,800 feet.

Establishment.—No special establishment for plantation is kept up in the Division, but the work is supervised by the Sub-Overseer in charge of sections ; malis and beldars are employed as required.

Financial results.—The following table shows the income for 1886-87 and for the two previous years.—

	1886-87.	1885-86.	1884-85.
	Rs.	Rs.	Rs.
Sale of Timber and Fuel	2,105	5,064	8,221
„ of fruits	700	1,035	655
„ of grass	714	215	287
Miscellaneous	30	6	47
TOTAL ...	3,549	6,320	9,210

The expenditure during the last three years is as follows :—

	1886-87.	1885-86.	1884-85.
Planting	833	305	705
Maintenance	960	506	663
Extension of avenues	369	112	173
Afforestation of waste land	...	550	...
TOTAL ...	2,162	1,473	1,541

BARI DOAB CANAL, 1ST DIVISION.

1884-85.—In the upper parts of the Division the work done consisted in removing dead trees, filling in gaps in lines of trees and prunning.

A small nursery was established at Madhopur for rearing young plants for transplanting.

The plantation right bank between Dhariwal and Kalair was enclosed by wire fencing.

Kasur Branch.—Operations were confined to two plots on this branch. One comprising an area of 25½ acres, extending on both sides of canal, from B. M. 160 to B. M. 168, known as the Jhandiala plantation.

The other comprising an area of 56·4 acres extending from B. M. 178 to B. M. 196 on both sides of canal, known as Pakhoki plantation. Both plantations were protected by wire fencing. The method of sowing adopted in the Jhandiala plantation was by dibbling seed in at distances of 1 foot a part. The plantation was irrigated from a head fixed above the nearest fall in the canal, a distance of 6 miles from the head of plantation.

The seed thus sown germinated freely, but owing to the excessive length of water-courses, irrigation could not be effectively carried out, and more that half the total area proved a failure. The Pakhoki plantation was sown in March and April with kikar seed, arrangements for irrigation were made by means of 4 water wheels worked by bullocks, it was soon found that the area commanded by the wheels was extremely limited owing to the sandy nature of the soil. They were consequently abandoned in July of the same year.

The total area fenced in and sown during the year was 82 acres, out of which an area of 12 acres was fairly well stocked at the end of the year.

Sobraon Branch.—During the three years under review, plantation operations on this branch have been carried out in 2 fenced plantations known as the Gagarbhana and Khawaspur plantations.

Gagarbhana plantation.—In March 1884 a wire fence was fixed along the left boundary from B. M. 96 to B. M. 156, the fence being left open at road crossings. The whole area was sown with kikar and shisham by dibbling the seeds in. It was watered by 3 pipe outlets fixed in the canal at B. M. 95, B. M. 115 and B. M. 156, in each case just above a fall. The seeds germinated but were destroyed by cattle which crossed from right bank of canal, where there was no fence.

Khawaspur plantation.—The Khawaspur plantation area 4 acres, from B. M. 220 to B. M. 223 on left spoil, was fenced in, in March 1884 as an experimental unirrigated kikar plantation. Kikar seed was sown broadcast and germinated fairly in low-lying places.

1885-86.—In the upper parts of the Division, the work consisted in removing dead trees, filling in gaps and transplanting, in place of dead trees in avenues. The mangoe plantation and groves were kept up during the year.

The plantation between Dhariwal and Kalair was maintained.

Kasur Branch—Jhandiala plantation.—In March 1885 additional irrigation for the Jhandiala plantation was provided by fixing two stream-wheels in the canal at opposite ends of the plantation, seed was again sown by being dibbled in as before on the left side of the canal, while the right was trenched at intervals of 10 feet parallel to canal, and cross trenches were dug at 100 feet apart for purposes of irrigation. Kikar and shisham was sown along the edge of the trenches.

Operations during the year were most successful, and by March 1886 3-4ths of the total area was well stocked with young trees.

Pakhoki plantation.—In view of the non-success of the preceding year's April sowings, it was decided in June 1885 to again sow the whole of the Pakhoki plantation with kikar in the hope that the seed would germinate during the rains. The rains of 1885 failed. In

October of the same year two stream wheels were fixed with a view to ascertain how many would be required to irrigate the whole in such sandy soil as was met with in this plantation.

The net result of operations at the end of the year may be taken, that 20 acres out of 82 were stocked with young trees.

Sobraon Branch—Gagarbhana plantation.—It was considered advisable to reduce the length of the Gagarbhana plantation and enclose both sides of the canal so as to prevent cattle crossing the canal, and destroying the young seedlings as they had done during the previous year. The fence was consequently removed from B. M. 95 to B. M. 126 and set up on the right side of canal, from B M. 126 to B. M. 151. The whole of the area now enclosed, 96 acres, 48 on either side of canal, was resown in March 1885 with kikar and shisham. Irrigation could not be carried out as the water-course along the Patrol road was inefficient and water could not be got to reach the end of the plantation, and the sowing proved a failure.

Khawaspur plantation.—In July 1885 the bare and high spoils in the Khawaspur plantation were again sown with kikar, but the rains proving a failure the sowings were not successful.

1886-87.—In the upper portions of the Division, the work done consisted in removing dead trees, filling in gaps in lines of trees about Madhopur and prunning.

Tibri plantation.—An area of 6 acres was ploughed up, trenched and water-courses laid out in May and June, later on it was sown with kikar seed.

Plantation between Dhariwal and Kalair.—Holes were dug for jaman trees, and in July they were transplanted from Malikpur chouki.

In August, September, October, November, December, 1886, and January and February 1887, the trees both at Tibri and Kalair were tended and watered. In March 1887, a new water-wheel was erected at Tibri for the plantations, and at Dhariwal to Kalair 200 young jaman trees brought from Malikpur and planted in the lower parts.

Kasur Branch.—Jhandiala plantation.—In March 1886, such plots in the Jhandiala plantation as were bare were resown and the net result at the end of the year is that the whole area of 25 acres may be considered to be stocked with young trees.

Pakhoki plantation.—In March 1886, a third stream-wheel was erected for the Pakhoki Plantation. These three stream-wheels, together with two pipe outlets in either bank, near the head and tail of the plantation, were considered sufficient if the plantation was trenched. The plantation was therefore trenched at 10 feet intervals, and kikar and shisham seeds were sown along the edges of the trenches, the higher portions with kikar and the low-lying parts with shisham.

The whole of the seed germinated freely, but owing to the seedlings not being kept cleared of jungle in August 1886, and to cold in the months of January and February 1887, many of the seedlings died down.

Deo plantation.—In March 1886 a new plantation was fenced in, from B. M. 190—203 on both banks (with wire from Bohiwal plantation now established) having an area of 15 acres. This was irrigated from pipe outlets from the ditch Rajbahas, running alongside. The system adopted was trenching at 10 feet intervals. The seed sown was shisham and kikar. Owing to uncleared jungle-growth in August 1886, and the cold of January and February 1887, which might have been averted by liberal waterings at the time, most of the young seedlings were destroyed.

The net result of the year's operation is area under operation 98 acres.

Ditto ditto ditto „ stocked about 29 „

Sobraon Branch.—In March 1886, the whole of Gagarbhana plantations from B. M. 143—156 were again sown, with a result that the seeds germinated to a certain extent, but were cut down by the cold of January and February 1887. Sowings were also carried out in the Khawaspur plantation, which may be said to be fairly stocked with trees.

The result of three years operations on the Sobraon Branch may be taken to be 50 acres stocked out of 100 acres operated on.

2ND DIVISION, BARI DOAB CANAL.

This report embraces the work done during the past three years, and the work generally has been the formation and improvement of plantation.

Main Branch Lower.—There are six plantations on the main Branch Lower as follows :—

In first Sub-Division—

(1) At Kotla.

(2) „ Grand Trunk Road Bridge.

(3) „ Jaggatpur.

In 3rd Sub-Division—

(4) At Kalsian.

(5) „ Bedian.

(6) „ Mir Mahammad.

Plantatian at Kotla.—This is on the right bank of canal B. M. 53-54. It was started in 1882 and an area of 1·5 acres was then sown, but the soil being poor the result was not good.

Some of the trees died and the ground where they had been sown was left blank until 1886.

In this year these portions were again planted and looked after with a more successful result.

Plantation at Grand Trunk Road Bridge.—This is on the left bank of canal from B. M. 99 to 108. It was started in 1884 and an area of 3·5 acres from B. M. 99 to 101 was planted with shisham trees. The area planted was all covered with young shisham trees, and subsequently in 1885 another plot 13·3 acres in area from B. M. 101 to 108 was enclosed, but only 9·8 acres were actually planted during the year. The result was again successful and in 1886 the remaining portion 3·5 acres in area which had not been planted in 1885 was sown, but the result was not so good as before, some of the young trees dying owing to poor soil and insufficient care. The spaces thus left blank will be replanted in 1887-88 after the ground has been thoroughly prepared.

Plantation at Jaggatpur.—This is on both sides of the canal from B. M. 154 to 162. It was started in 1880. During the past three years the work done was only watering and tending young trees. This plantation is now thickly stocked with trees and requires thinning which will be done in 1887-88.

Plantation at Kalsian.—This is on the left bank of the canal between R. D. 2,33,000 and R. D. 2,35,000 ; it was first stated in 1881 and an area of 4 acres was planted with shisham. The result has been most satisfactory as the plantation is now fully stocked and the young trees are thriving. During a recent inspection the Superintending Engineer noticed that there were some wide-spreading kikar trees and a few badly shaped ones which will be removed. It is hoped that after the present year it will not be necessary to do more than give ths trees an occasional watering.

Bedian Plantation.—In 1884 a plantation of 19 acres on the left bank of the canal below the Thamman Rajbaha was sown with shisham during the rains, excepting a plot of two acres which was reserved for indigo.

The indigo failed and another attempt was made in 1885 with the result that five maunds of seed were obtained. There was however no local demand, for this audit had to be sent into Lahore for sale.

Regarding the plantation the first sowings were made in the rains 1884 and did not succeed owing to a quick growth of jungle. But a later attempt made in February 1885 was more successful. The ground was regularly trenched and young plants put in. There was, however, a blank space of four acres near the end of the plantation where water could not be easily passed down, and this was again sown with kikar last year. But the severe frosts killed off a great number of young seedlings, and in order to fill up blank spaces, it was necessary to transplant from portions of the plot higher up where there were spare seedlings and it is hoped that by the end of this year the whole plot of 19 acres will be stocked. Water can now be given to the tail portion of the plantation from the Sarhali minor (Thamman Rajbaha).

Mir Muhammad plantation.—On the right bank of the canal below the bridge of that name was first started in 1881 where a plot of seven acres was sown below B. M. 347. This is quite a success and the trees are now thriving. The plantation was extended by two acres in 1884 and again by five acres in 1886. The result of last year's sowing is however not satisfactory for the very heavy frosts killed off numbers of young seedlings which had been sown in trenches at 10 feet intervals.

Other operations.—On Kotia Rajbaha for a distance of one mile from the head, a line of trees was established in 1885. These trees were watered and tended during 1886 and they are growing up well.

On the Basarke and Thamman Rajbahas for a mile up stream and down stream of the Pohwind and Rukhanwala choukis, young trees were put down in 1885 and the result has been satisfactory as far as the operations near Rukhanwala are concerned. It is very difficult to keep cattle off the banks of the Rajbahas, and a good deal of damage was done to young trees by cattle ; gaps in the shade line of the Main Branch were filled year by year and generally the result has been successful.

It seems doubtful if the Sub-Overseers with such large charges, each man having over a hundred miles of Main and Minor channels to look after, can give as much attention to plantations as would appear desirable, and any extensive operations would require a special plantation staff.

Sales of wood and grass.—The following statement shows the details of sales for the past three years. A decrease in the receipts from the sale of wood during 1886-87 was due to the fact that in 1885 most of the dead and dry trees on the canal and Kiru escape were collected and sold by public auction, and thus very little was left for sale during 1886-87.

Decrease in the receipts from sale of grass during 1886-87 was due to the stopping of cattle grazing on the Rajbahas. Much less is given for the grass where only *cutting* is allowed. Villages do not seem inclined to levy grass for cutting.

Description.	Amount	Total.	Remarks.
	Rs.	Rs.	
1884-85.			
Wood	4,572		
Grass	6,907		
Fruits	2		
		11,481	
1885-86.			
Wood	6,738		
Grass*	5,657		*This includes Rs. 295 realized in March 1886 for 1886-87.
		12,395	
1886-87.			
Wood	3,734		
Grass	3,092		
		7,636	

A detailed statement of profit and loss is given below. The great increase in profit in 1885-86 was due, (1) to the fact that no extensions had taken place, and (2) to larger sales of grass.

Year.	Income.				Expenditure.	Difference.		Remarks.
	Value of wood.	Value of grass.	Value of fruit.	Total.		Profit.	Loss.	
	Rs.	Rs.	Rs.	Rs.	R.s	Rs.	Rs.	
1884-85 ...	4,572	6,907	2	11,481	3,176	8,305	...	
1885-86 ...	6,738	5,657	...	12,395	1,959	10,436	...	
1886-87 ...	3,734	3,902	...	7,636	1,658	5,978	...	

There is a nursery at Grand Trunk Road bridge from which young shisham seedlings were transplanted to the unstocked portions of the small plantations.

A small nursery has also been started at Jaman where a plot of land 1,400 square feet in area has been sown with seed obtained from a large shisham tree near the chouki.

The programme for 1887-88 and the next two years will be—

(1) Maintaining existing plantations ;

(2) Improving plantations on left bank of canal from B. M. 122 to 147 (= 25,000 feet =5 canal miles) by irrigation from the new Bahoru Ditch Rajbaha.

(3) Establishing a fuel plantation on Aliwal cross Lock channel.

(4) Improvement of the portions between Dal bridge R. D. 2,70,506 and Bedian bridge R. D. 2,41, 250 on both sides of the canal, the total length of which will be 29,256 × 2 =58,512 or 11·7 canal miles and the operation will comprise—

(*a*) Felling trees that now exist in the portion to be taken up, excepting the shade line and certain well shaped trees.

(*b*) Fencing and trenching for new seedlings which will be transplanted at regular intervals of 15 feet and regularly tended until strong enough to be free from danger.

Lahore branch.—The work done during the period of three years on the Lahore Branch has been chiefly maintenance of existing plantations and gardens. Small extensions of old plantations have been made of Niaz Beg and Majupur, but nothing has been done beyond that.

On the main line of the canal avenue an attempt was made in 1884 to transplant young trees to fill up some of the many unsightly gaps. This had also been tried in previous years, but the success achieved was not great and the expenditure in establishment was heavy, so after 1884, this was abandoned. Generally speaking the line of canal (including both avenue trees and trees on spoil) is well wooded, but the annual loss of trees is considerable, and the reproduction by natural self-sowing may be considered *nil*, owing to the fact that cattle grazing is permitted, so the gaps on the canal line are increasing. Many of these gaps were never clothed with trees owing to bad kankar or *reh* soil, but in other places where

trees have died down or have been blown down, the gaps so caused invariably show a tendency to increase. To give an instance of the destruction caused by wind in October 1886, over 70 trees were blown down between Mian Mir and Niaz Beg by one dust storm.

On the distributaries some young trees were planted out in 1883 up and down stream of the inspection choukies—these were tended in 1883 and part of 1884, but owing to the necessity of reducing establishment, nothing further was done in this direction. Most of the trees so planted out (over 2,500 in number) did well at first, but many have since died owing to want of water and damage by cattle.

The following work was done in extending plantations :—At Majupur chouki a plot of ground between the Rajbaha and canal was sown in 1884 with kikar and shisham, no water was given and the sowing was a failure.

In 1885 the attempt was made again and water was supplied by a stream wheel, but this also proved a failure, the coarse jungle grass having completely choked and killed the young seedlings. At the close of 1886 a third attempt was made. Extensive jungle clearance was done and the whole area carefully trenched. A sowing of shisham was made in March 1887.

At Kohali the upper Lock channel island was sown in 1884 with kikar and shisham, the seeds being dibbled in. This did not prove a great success, though some of the kikar at the top upper end germinated and is doing well.

In 1885 apparently nothing was done.

In 1886 the island was flooded in hopes that the roots of the old shisham trees had enough vitality left in them to coppice, but this did not prove to be the case. Some kikar seed was also ploughed in during June 1886, and this also proved a failure.

As flow irrigation is available over the greater part of the area of this island the formation of a new plantation must be feasible, and it is proposed to persevere in the attempt during the coming season.

The young plantation on the lower island reported in 1883 by Mr. Day as doing well has continued to thrive wonderfully. The roots of older trees cut down in 1884 have also coppiced well and nearly the whole of the area is now a flourishing young shisham plantation.

At Niaz Beg the shisham plantations on the both sides of the canal started prior to 1884 has been carefully tended and maintained during the last three years.

The plantation on the right bank, especially on a small plot where flow irrigation is available, has done very well, the trees now are from 10 to 20 feet high over the whole area, those on the higher ground, where lift irrigation only is possible, not having done so well. The soil is a very bad hard kunkar with reh in it, and the trees require a lot of water.

This plantation is fenced with wire and an agave hedge was also planted, but the soil is uncongenial for the latter and it has only done well in the lower and moister soil ; on the kunkar it has died down every year. During 1886 a new plantation was started on a plot of ground lying between the escape and Rajbaha. This was carefully trenched and sown with shisham during March 1887.

The line of avenue trees along the Government house Rajbaha road planted by Mr. Day in 1883, has been maintained and the young trees are doing well.

In 1884-85 revenue was obtained by sale of wood cut down for fuel and supplied chiefly to the Amritsar Provincial Division. Since that time no felling has been done, sales being restricted to wood obtained from trees destroyed by natural causes.

The value of timber has gone up during the past three years. Shisham from six to eight annas per cubic feet and kikar from 4 to 6 annas for trees of good girth. Firewood has remained nearly the same price, *viz.* about Rs. 25 per 100 maunds.

Statement of sales of wood and grass :—

Description.	Amount.	Total.	Remarks.
	Rs.	Rs.	
1884-85.			
Wood	4,128		
Grass	1,709		
Fruit	55		
		5,892	

Description.	Amount.	Total.	Remarks.
1885-86.			
Wood	4,546		
Grass	2,180		
		6,726	
1886-87.			
Wood	1,754		
Grass	1,569		
		3,378	

The derease in the receipt of wood and grass is due to the causes explained above under Main Branch Lower.

A detailed statement of the profit and loss is also given below :—

Year.	Income.				Expenditure.	Difference.		Remarks.
	Value of wood.	Value of grass.	Value of fruit.	Total.		Profit.	Loss.	
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1884-85 ...	4,128	1,709	55	5,892	1,609	4,283	...	
1885-86 ...	4,546	2,180	38	6,764	2,194	4,570	...	
1886-87 ..	1,754	1,569	55	3,378	1,551	1,827	...	

Timber and fuel to the amount of Rs. 1,282 is still lying in hand for sale on 31st March 1887.

SWAT RIVER CANAL DIVISION.

Water was not available from the Swat River Canal for arboricultural operation before the year 1885, and as the climate in the locality is not such as to permit of the growing of trees without irrigation except at great expense, such operations as were carried on before that time were on a small scale, being principally confined to the planting of a few trees near the various fortified posts, and the establishment of avennes along the newly constructed canal near the head where water was obtainable from the river and existing small irrigation cuts.

It was not till the returns for 1885-86 were submitted, that the operations had extended sufficiently to make a mention of them in detail necessary in the present report. At the end of the year 1885-86, about 5 miles of single avenues had been established. Of these, 3 miles were situated in the upper 5 miles of the Canal, nearly a mile near Ziam enclosare (12th mile) nearly one mile near the 18th mile, and half a mile near the 20th mile. Under progress in groves, nothing was shown, but 55 acres were reported as set apart for nurseries the ground having been prepared for seed. I think that this area would have been more properly described as prepared for the sowing of groves. It is situated as follows :—

	A.	R.	P.	
Near Ziam ...	3	3	0	On the main canal.
„ Mirabad ...	1	1	13	
„ Hissara ...	2	3	0	
„ Takhtbahi ...	18	2	0	On No. rajbaha.
„ Sari Bablol ...	29	0	0	
Total ...	55	1	13	

This land was all sown in 1886-87 and blanks have since been resown. The kinds of seed selected are shisham, which thrives remarkably well in the district with irrigation ; and kikar which is found to be liable to be destroyed during its first year by excessive cold, mulberry is now being sown in blanks, as it sows itself freely in places where the seed falls from existing trees, and as the mature trees existing, though few in number, seem to thrive well. These plantations are all fenced in with wood or steel fences and are supplied with irrigation. They are at present in a thriving state. Wherever the opportunity has presented itself during the year, seed of shisham has been sown along the boundaries of roads and rajbabas by taking water-courses along the boundary and sowing on its banks. In this way some 35 miles have been sown, bnt these lengths have not been treated as avenues in the

present year's statement of progress as the seedlings are only a few inches high anywhere and it is not to be expected that by any means the whole of the length will succeed, but as the cost of such work is trifling per mile, the money is well expended if any considerable fraction of the length succeeds, and gaps can be treated hereafter. Moreover, by sowing at once along new channels where irrigation is just started it will be often possible to raise trees without fencing, owing to the small population in such places and the consequent absence of large herds of cattle.

About 7 acres, *viz.* about one at each enclosure, has been set apart for nurseries.

The operations during the current year will be directed to the extension of the avenues along the main canal and the maintenance of the existing avenues and groves.

CHENAB CANAL DIVISION.

Plantation.—An estimate for Rs. 442 was sanctioned in Joint Secretary's No. 3260 I, dated 27th July 1886, for sowing the spoil banks of Escape Channel. The work was put in hand in August 1886 and the whole area was sown.

Sowing spoil banks Escape Channel.

The work however, had been started too late and the consequence was a complete failure. The greater parts of the banks consist of pure sand, so that in any case it is doubtful whether anything could have been done. The banks too are very high and cannot be irrigated.

Kot Nikka Branch.

The spoil banks of this branch were also sown, but, as in the case of the Escape Channel, too late in the season.

Very few plants have therefore sprung up, so few indeed that this attempt must also be recorded as a failure.

No attempts have been made to grow avenues or groves, as water has not yet been let into the canal.

Nurseries.—A small area has been sown at mile 2 and mile 15 Vaniki Rajha Choukis at Chouki m. o. main line and at Chokis m. 8, 18, and 28 Kot Nikka Branch, but the results are very poor.

There was no proper establishment to look after the work and the consequence is that there are not more than some two or three hundred trees. Those, however, that have stood last winter's frosts promise well. *Reh* too killed many of the plants.

Nothing was done last year: the results here recorded are due to previous years.

LOWER SUTLEJ AND CHENAB DIVISION INUNDATION.

General remarks.—Sowing of seed on spoil banks has not been attempted during the last three years as the seed of plants would be destroyed during clearances. The trees upon the canal banks are mostly self sown and grow on the water's edge.

Avenues of trees.—The statement of avenues of trees has been filled in for both the Sutlej and Chenab Canals. The trees are not in very regular lines along most of the canals only on the Chenab band are the trees planted regularly, as these dead trees are replaced by new plants.

Description of work done.—The young trees on the Chenab band and also in some chouki compounds and near Regulators Sutlej Sub-Division are regularly watered and cared for, also protected from attacks of animals, goats and cattle; planting operations are carried on at the same time; on the Sutlej Canals near the chouki where the same care can be taken of the plantations. Shisham seed has been sown this year and to a great extent has germinated successfully.

Plantation operations on the Sidnai Canal only commenced last May and consisted merely in sowing seed in the chouki compounds.

INDUS CANAL, DERA GHAZI KHAN DIVISION.

General remarks.—The rainfall at the Dera Ghazi Khan District, which is so small and uncertain that it has little or no effect on arboriculture, was in the first of the years under review rather above, in the last much below the average.

2. The trees in this Division are all planted in avenues, being first propagated in nurseries maintained for the purpose. About 80 per cent. are shisham, the remainder being kikar siris, and farash. There are few tuns and eucalypti.

3. The progress during the last three years is as follows :—

At the end of the year		1884-85	there were 159½	inches of avenues.
Ditto	ditto	1885-86	175	ditto.
Ditto	ditto	1886-87	182	ditto.

4. In reviewing the operations of the past three years however it is somewhat difficult to balance the gain represented by so many miles of young saplings planted out against the loss as caused by the incursions of the Indus, whereby portions of the older avenues of shisham trees, of age varying from 12 to 25 years, have been swept away. At the heads of the Shoria, the Kasturi, the Sahiban, the Nur and the Kutul canals and on the Bahar Shah, the Shah Jamal and the Buliwala bunds many hundreds of trees, old enough to dispense with attention and to defy the ravages of camels, have had to be cut down or abandoned to fall into the river.

5. To avoid similar losses in future, avenues are now being planted further in land, but less successfully, owing to the greater depth of the spring level, and the increased difficulty of watering the trees in the dry season. The percentage of failures from this cause alone is heavy, but even of those trees which survive the drought a large number are destroyed by camels in spite of frequent and heavy fines inflicted on their owners.

During the last cold weather the camels were more than usually destructive on account of the prolonged drought in the Pachâd tract. This is their ordinary grazing ground, but fodder there has recently been so scarce, that the herdsmen deemed a good feed on the shisham trees well worth the risk of even a heavy fine.

6. *Establishment.*—There are two mates, and a staff of malis and bhishtis, about 30 in number on an average.

7. The following table shows the expenditure during the period under review :—

	1884-85.	1885-86.	1886-87.
	Rs.	Rs.	Rs.
Watering	2,657	2,680	2,715
Maintenance of nurseries ...	459	237	271
Planting out	231	376	296
TOTAL ...	3,347	3,293	3,282

The receipts were as follows :—

1884-85.	1885-86.	1886-87.
Rs.	Rs.	Rs.
1,490	1,031	1,351

It is to be pointed out that as plantation operations only date back some 25 years, the trees are still too young as a rule to command a high price.

Trees are rarely sold unless threatened by the incursion of the river, or when they have been blown down by storms, or felled owing to alterations and improvements to the canals. Few of the shisham trees have much heartwood and they are therefore as yet of little value as timber. There are few roads and hardly any carts in the District, so that the difficulties of transport practically limits the market for even fine trees to the purchasing power of the zamindars in the immediate vicinity, who are generally very poor. These reasons explain why the annual receipts by sales of wood are so small.

There can be no doubt however that with the growth of the trees their capital value is rapidly increasing in much greater proportion than the annual expenditure, including the accumulated loss of interest.

MUZAFFARGARH CANAL DIVISION.

1. The total number of trees for the three past years is as follows :—

1884-85	...	...	142,665
1885-86	...	...	139,493
1886-87	...	...	131,046

Among these, however, the only trees that have any market value are the sissoo or shisham and the kikar. The figures for these are as follows :—

Year.		*Sissoo.*		*Kikar.*
1884-85	...	17,736	...	19,724
1885-86	...	15,722	...	21,955
1886-87	...	14,370	...	20,443

With the exception of a few hundred trees grown in Inspection bungalow compounds and on embankments, the trees are all of spontaneous growth.

From the above figures it would appear that there is a serious falling-off in the number of trees. It was not, however, till the spring of 1886 that the enquiry into what should be considered Government channels and what private channels were concluded, and therefore the previous counts would be useless for comparison. Even now there will always be a number of trees whose ownership cannot be decided without an enquiry in each case.

The income was Rs. 4,731 as compared with Rs. 2,915 of previous year, or an increase of Rs. 1,816. This is due to more of the inferior woods such as tamarisk, &c., being sold for fuel for Railway works, and the sale of good sissoo, cut down in widening certain channels.

The expenditure was Rs. 538 as compared with Rs. 584 in previous year—the decrease being Rs. 46. Expenditure was chiefly incurred in pay of malis for compound of Inspection bungalow. The Paharpur plantation was abandoned, as the trees, after promising well in the first few years, were attacked by whiteants ; whiteants appear to attach trees of 2 to 4 years growth that cannot be swamped with canal water.

SIRHIND CANAL, 3RD DIVISION.

The operations in arboriculture in this Division will be treated of under the following heads :—

I.—Nurseries
II.—Avenue.
III.—Groves.
IV.—Expenditure.
V.—Income.

Separate forms have been prescribed for each of the above heads.

I.—Nurseries.—Twelve small nurseries have been maintained for the purpose of producing shisham, mangoe, jamau, jamoa, bamboo, palm, mulberry and tun trees for the avenues and chouki compounds. These are distributed as follows :—

		A.	R.	P.
4 on the Main Line aggregating	...	2	2	27
4 „ „ Abohar Branch „	...	0	3	38
4 „ „ Bhatinda „ „	...	5	3	15
TOTAL	...	9	2	0

As transplanting is a costly way of producing trees it has been adopted to a very limited extent, and consequently large nurseries have not been required. The seed chiefly sown during the last two years has been that of mangoe, jaman, jamoa and tun trees. As nearly all the Canal plantations consist of shisham and kikar at present, and it is desirable to have some other kinds introduced.

The nurseries on the Abohar Branch are watered by flow irrigation ; all the other are watered by hand.

The seedlings in the nurseries are thriving and as good generally as could be wished.

II.—Avenues.—The following table is an abstract of the avenue statements for the last three years:—

Year.	Length of avenue of single line of trees at beginning of year.	Length of single lines planted during year.	Length of single lines which have failed or been cut down.	Length of single lines of avenues at end of year.	Remarks.
	Feet.	*Feet.*	*Feet.*	*Feet.*	
1884-85 ...	1,61,718	12,000	...	1,73,718	Total length of Canal 8,56,760 ft.
1885-86 ...	1,73,718	11,500	44,700	1,40,538	
1886-87 ...	1,40,538	3,03,176	46,424	3,97,290	

In 1885-86 26,000 feet of an avenue was cut down on the Main line to make room for the telegraph line, and this was the principal cause of the total length at the end of that year being so much less than at the beginning. Transplanting having been found costly was not practised to any extent for several years except for bridge ramps and chouki compounds. In 1886-87 a line of avenue trees were sown in pits 10 feet apart along the whole length of the Main line on the left (patrol) road bank. Considerable lengths of the right bank road were also sown in the same way. Shisham seed was sown, germinated well, and the young seedlings are on the whole progressing favorably. The total length sown in this way was

2,86,150 feet. Several seed were sown in each pit and the worst seedlings are being weeded out as they grow up, so that finally only the fittest will remain. The advantages of this system are that the first cost is small and casualties are fully provided for from the first. The disadvantage is that protection is required for a longer time than for transplanted seedlings. On the whole it so far promises to be successful and at a moderate cost.

A good many rare trees are being planted in the patrol road avenue Main line.

Avenues on the branches of the canal are almost entirely confined to bridge ramps and Choki compounds.

III.—Groves.—The grove on the Sirhind canal consist almost entirely of the plantations on the spoil banks ; spare ground outside the banks and in chouki compounds.

General condition of plautations Main line.—Length 39 miles.

0 to 18 miles, 26 to 39 „ } Banks fairly well wooded and trees on the whole thriving very well.

18 to 26 miles { Trees very far apart and in some parts none at all except the avenues. Existing trees not thriving well.

In the reach last mentioned the soil is very bad and sandy, and it will never grew good trees.

Combined branches.—Length 2·2 miles.

0 to 2 miles ... Banks fairly well wooded. Throughout soil bad.

Abohar Branch.—Length 48 miles.

0 to 23 miles, 25 to 44 „ } Banks fairly well wooded. Trees very thriving.

23 to 25 miles, 44 to 48 „ } Very few trees; soil contains a great deal of kunkar and is generally unfertile.

Bhatinda Branch.—Length 82 miles.

0 to 39 miles { Banks thinly covered but numerous blanks exist. The soil is sandy and contains a good deal of kunkar.

39 to 82 miles { Very few trees, in many miles none, and what are, have been sown lately. Country intensely dry. Soil very fair.

Rainfall.—The rainfall may be regarded as having, on the whole, been of the average amount. The difficulty so far as growing trees is concerned consists in (1) the total fall except at Rupar and Cham kour usually being small, and (2) in the long breaks (very liable to occur on the branches of the canal) drying up the seedlings. It is very difficult for young trees to survive the drought if the bulk of the annual rain is received in a few heavy falls.

The following table shows the areas for the whole Division. If further details of the distribution of these areas are required, they are procurable from the tabular statements of groves submitted annually:—

Year.	Area stocked with trees at beginning of year.	Area planted during the year.	Area on which cultivation has failed or trees been cut down.	Area stocked with trees or plants at end of year.	Remarks.
	Acres.	*Acres.*	*Acres.*	*Acres.*	
1884-85 ...	2,595	726	37	3,284	Area available for planting of groves 5,899 acres.
1885-86 ...	3,284	1,917	1,216	3,985	
1886-87 ...	3,985	2,465	2,358	4,091	

Kind of trees.—The groves consist almost entirely of kikar and shisham with small areas of ber and mulberry.

Sowing.—The principal part of the groves have been grown from seed sown broadcast on the spoil banks when the earth was freshly thrown up or from seed sown in plough furrows made across the ground at intervals of 10 to 15 feet apart. Both these systems answered where the ground to be sown had a coat of spoil earth over it, but only when this was the case.

During the last two years it has been the practise to dig pits one foot diameter and deep before the rain to fill the earth in as the rains were commencing and to sow two or three kikar or shisham seed on the top of it, burying it to a depth equal about its own diameter. As far as cheapness of execution and germination of the seed was concerned, this system answered. Watering was too costly to be attempted. The young seedlings grew satisfactorily until the first long break in the rains occurred, when they dried up over a great part of the areas sown. It is believed that *without artificial watering, subsequent failure would have* occurred during the breaks in the rains of the last two years, whatever system had been followed.

The parts of the banks remaining to be sown are the hardest and least fertile tracks on the Main line. Combined and Abohar Branches—parts which have in fact failed repeatedly before under other systems.

On the Bhatinda Branch all the ground in the last 42 miles of the 82 miles in this Division is sandy and intensely dry. In future it is proposed to only try kikar seed in such parts and to at once re-sow when from any cause the seed sown has failed. Also whenever practicable on the Abohar and Bhatinda Branches the ground will be irrigated.

Nearly all the blank parts of the canal banks were sown in 1886-87 and this will be done again in 1887-88, but kikar only will be sown. If the rains are favorable it will be possible to stock a great part with young trees. The parts of the Canal banks where sowing remains to be done are chiefly as follows :—

Main Line	12 to 26 miles.
Combined Branches	1 to 2 „
Abohar Branch	23 to 25 „
	44 to 48 „
Bhatinda Branch	2 to 3 „
	4 to 8 „
	20 to 23 „
	39 to 42 „
	45 to 53 „
	57 to 59 „
	63 to 82 „

All these lengths have already been sown once and some trees exist on them. The greater part of the sowing remaining to be done is on the Bhatinda Branch from 40 to 82 miles.

Transplanting.—Was only practised for groves in the case of Chouki compounds.

Watering.—No watering whatever was done to groves except in the case of chouki compounds where flow irrigation could be got.

Thinning and felling.—Was done on the Main line and Abohar Branches wherever called for. The Bhatinda Branch plantations were not old enough to require thinning. The kikar trees on the inferior land of the Main line have been dying a good deal. The only explanation of this which can be given is that the roots have got down through the soft spoil to the hard natural earth below. The trees on the spare land at Rampur were all felled in 1885-86 (except saplings) preparatory to the ground being relinquished.

Fencing.—Has only been erected round small groves at Rupar, Akalgarh and round the nurseries.

The canal plantations consists of long strips which for the area enclosed would require a deal of fencing.

IV.—Expenditure.—The following table shows the expenditure incurred during the last three years for the whole Division:—

Year.	Nurseries.	Maintenance and repairs.	Extension of avenues and groves.	Total.
	Rs.	Rs.	Rs.	Rs.
1884-85	688	5,829	3,256	9,773
1885-86	1,171	5,940	3,994	11,105
1886-87	1,683	3,836	3,244	8,763
Total ...	3,542	15,605	10,494	29,641
Mean ...	1,181	5,202	3,493	9,880

The expenditure will continue to decrease as regard groves, but there will be some increase on account of avenues.

V.—Income.—The following table shows the income realized during the last three years for the whole Division:—

Year.	Avenues and groves.	Outlay as above.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
1884-85	9,281	9,773	...	492
1885-86	14,580	11,105	3,475	...
1886-87	8,466	8,763	...	297
Total ...	32,327	29,641	2,686	...

There has been a rapid decrease in the receipts for grass and unfortunately in those for dead trees. At present the grazing on the Abohar and Bhatinda Branches is not let on account of the damage which would be caused to the young trees. The cutting of grass is let, but that does not fetch such good returns as grazing.

SIRHIND CANAL, 4TH DIVISION.

Rainfall.—The district through which the portion of the canal in this Division passes is very dry and sandy and the rainfall scanty and uncertain. In the three years under review the rainfall was precarious and below the average, while the larger portion of the rain in the monsoon season fell in the first month or two, and was followed either by a long break or total cessation during the months of August and September which are the most vital months for the growth and success of plantations. The statement annexed shows the total rainfall in each year, as registered by Canal guages at Canal stations.

Rainfall Statement, 4th Division S. Canal.

Name of Canal.	Name of Station.	Name of Tahsil or State.	Year 1884-85.	Year 1885-86.	Year 1886-87.	Average of three years.
S. N. Channel ...	Ferozepore ...	Palla ...	8·5	9·5	17·3	11·8
Do. ...	Do. ...	Phidda ...	17·2	13·6	17·9	16·2
Abohar Branch ...	Moga ...	Gholia ...	14·6	19·1	21·3	18·3
Do. ...	Faridkot ...	Daipie ...	12·7	11·0	11·2	11·6
Do. ...	Mukutsar ...	Maharajwala ...	13·2	6·3	10·3	10·0
Do. ...	Fazilka ...	Gobindgurh ...	5·0	9·3	7·3	7·2
Bhatinda Branch ...	Patiala ...	Rackai ...	...	7·4	13·8	10·6

In the first years of plantation operations and until the canal was opened and kept constantly flowing, dependence had to be placed entirely on the rainfall for producing germination and for supply of nourishment to the seedlings, the results obtained were therefore generally poor. In the first two years under review sowings were also generally made dependent on rainfall, except line trees transplanted on bridge ramps and in chouki compounds which were hand-watered, and a few isolated cases when flow irrigation was successfully arranged for. In the last year sowings were principally done at places where flow irrigation was obtainable and the results were a much lower percentage of failures and a greater extent of bank brought under plantation. Generally it may be laid down for this district that very minute return may be expected, if nourishment from rainfall is solely depended on while success is certain and quicker wherever irrigation is resorted to.

Sutlej Navigation Channel.—The operations carried out on this canal previous to the year 1884 are not exactly known, but some very successful results in avenue plantations were obtained. At the sites of most of the falls and bridges for half a mile and more above and below, avenues of shisham have been planted along the right boundary road and have thriven. In some parts of the canal where spoil was heavy, kikar seed was evidently sown on the freshly thrown up earth, and flourished producing very fair groves of trees, but these successful cases are few and form a very small percentage of the area of bank to be planted out. One or two chouki compounds were successfully planted out.

In the latter part of 1883-84 and during 1884-85 the following plantation work was taken in hand, the canal having then begun to irrigate. Water was taken by means of a wooden shoot fixed in the Chirak fall, 5th mile along edge of left patrol bank, and plantations sown and irrigated for a couple of miles down, these consequently flourished well. Water was also taken from the head race of Ghall Mills, and left spoil bank irrigated for a length of two miles ; the result being a fine flourishing plantation. Two large mangoe gardens were planted out with mangoes and orange trees at Gill 10th mile and Feroze Shah 33rd mile ; the former was first watered by hand and subsequently by flow irrigation direct from the canal, and the latter garden was irrigated from the water-course drawn from the Ghall Mill channel. These mangoe gardens have not proved a success ; the seedlings do not flourish, whatever may be the cause, whether the light nature of the soil (containing "reh" salts) or the abundance of whiteants in the soil ; the seedlings constantly die and are being as constantly replaced. At Feroze Shah, with a fair command of water, scarcely a seedling has survived, and it will probably be decided to definitely abandon the site as a mangoe garden.

The planting out of bridge ramps with line trees and of the islands around the lock-keepers huts, between lock and fall, was started.

In 1885-86 the whole of the spoil banks on both banks in the first 10 miles from the head were sown with kikar and shisham both broadcast after ploughing up, and in pits dug 10 feet apart, but owing to the insufficient rainfall in the monsoon months the seeds either did not germinate or the young plants which sprung up died off again from the prolonged drought.

All bridge ramps were planted out with line trees and watered by hand, and these have generally flourished in places, though the system is costly and failures frequent.

In 1886-87 it was intended to resow selected lengths in the first 10 miles, which failed the previous year, and water by lift, as spoil is high, but the early rainfall, and the disastrous damage done to the canal, the repairs of which called for the entire energies of the staff and all local labour, prevented the work from being taken up. But little sowing was done, and that very late, and existing plantations and trees were generally maintained and renewals done. At lower end of canal a wooden shoot was fixed in the Ugoki fall 36th mile, similar to that at the Chirak fall and water taken nearly as far as Walour. Seed was sown wherever high spoil did not exist, but the plantation was not looked after by the subordinates and has not been very successful. The length will be again sown in the current year. The net result of operations so far is that probably about $\frac{1}{10}$th of spoil banks more or less show trees growing while ridges, ramps and chouki compounds are fairly well stocked. The great want is water on the plantation. In 1887-88 it is proposed to put in a head in the Dhulkote Rajbaha and irrigate for 2 or 3 miles as far as Baraghar falls on left bank, also to draw water from the Baraghar Mill Channel and water as far as Phidda. Perhaps an outlet in the Jagraon Rajbaha and one of its minors may command some portion of the right bank below Gill. For high spoil and on right bank, water must be lifted, and it is proposed to use a stream wheel if this can be arranged so as not to interfere with the passage of boats.

Abohar Branch.—Previous to 1883-84 when the Canal began to irrigate, but little useful results were obtained and that only in the Gholia Sub-Division. On left bank above the Gholia fall trees have flourished in the land occupied as the silting reach of the tail length of the Manoki Rajbaha. Also there is a fine kikar plantation for a mile or so in the high banks or both banks below the Chinowal fall. But nearly all the present success has been gained since the opening of the canal. In the latter part of 1883-84 and in 1884-85, the following work on plantations was carried out. A plantation made on right bank above Gholia fall sown with shisham and watered from the Baga Rajbaha. This plantation has been successful. A plantation on left bank below Chinowal in 61 and 62 miles where the Sibian Rajbaha takes up the boundary ditch and watered from that Rajbaha. Plantation on right bank below Chinowal watered from the Datewal minor.

Both banks of mile 114 were sown and watered from the Aspal and Sarawan Rajbahas. In mile 125 left bank was sown and watered from the tail of Sarawan rajbaha. Other lengths of bank were sown, but as there were no watering arrangements the seed failed. Nearly all the three existing canal and rajbaha choukis were planted out and transplanting of avenue trees along bridge ramps commenced. Also mangoe gardens were planted out on left bank at Dhaipie 77th mile, Maharajwala 103rd mile, and Alamwala 110th mile.

In the year 1885-86 the plantations of previous year were maintained and extended, and renewals done. Seed was also sown on both banks on the high spoil in miles 122, 123, 124 near Gobindgurh chouki and hand watered ; these have succeeded. New chouki compounds were planted out, and all bridge ramps supplied with line trees.

In the year 1886-87 the plantations were greatly extended and good progress shown. It was determined to take up only those lengths of bank commanded by flow irrigation and to water by outlets fixed in rajbahas, and minors and silting banks.

An outlet was fixed in Manoki rajbaha left bank, just above the tail fall into Canal and water taken along left patrol bank, and arrangements made for sowing 2 or 3 miles of spoil. A portion of this length was sown in the year. The plantations watered by the Sibian rajbaha and Datewal minor were extended. Outlets were placed in Minors Nos. 2 and 3 Sibian (and No.

9 Boya on right bank) and a length of left bank sown. Both banks were sown in miles 100—102, 107, 110—113, 119, and parts of 122 and 123 and watered by flow. New rajbaha chouki compounds were planted out ; line trees were planted out for 11 miles in all, along Arniwala Rajbaha and Escape and Jaitie rajbaha, also about 140 acres of the Reservoir were sown and arrangement made for regularly watering this area. In all nearly 400 acres of sowing were carried out, and it is believed that there is only a small percentage of failure.

For the current year it is proposed to complete and extend the areas commanded by flow in the plantations started last year and to take up all other lengths when water can be obtained. It is also proposed to put up one or two stream wheels in the Canal, to water high spoil requiring lift, or the compounds of such choukis as Dhapie and Samalsar.

Bhatinda Branch.—The digging of this canal in this Division was only started in 1885-86 and plantation operations have been going on for two years only. In 1885-86 the new spoil banks were extensively sown broadcast and below the Teona fall on left bank where no spoil exist. Seed was sown in pits dug 10 feet apart in the original soil. The greater portion of the 18 miles of canal was dealt with in this way. But experience has convincingly shown equally with Abohar Branch that no successful results may be expected by dependence on rainfall, and that flow irrigation must be provided. The rainfall at the lower end of the Bhatinda Branch is less than on Abohar Branch and very precarious, the heat is very great and the soil is very sandy. But very good results in plantations can be obtained in this sandy soil, if only water is given to it. Some of the seed on the fresh earth of the new spoil banks germinated, and trees sprung up, but have withered away again for want of moisture ; the seeds in pits never germinated. Two nurseries were formed at Payvari and Baihman temporary quarters and trees transplanted into compounds of two canal choukis.

In 1886-87 seed was again sown on spoil in the rains, but again failed, but in the cold weather arrangements were made for converting the left boundary ditch into a plantation Minor from below the Teona 89 mile fall having a head in the Teona rajbaha. This minor will command almost the whole area of spoil land to the 100 mile, and when completed and the land sown will suffice to raise plantations in these 10 miles. When the arrangements on the left bank have been completed, the land on right bank will be similarly dealt with. It is hoped that large results will be reported on plantations for the year 1887-88.

In 1886-87 three rajbaha chouki compounds were planted out, and along some 4 miles of Kot Bhai rajbaha line trees were planted on boundary road.

SIRHIND CANAL, 5TH DIVISION.

I.—Nurseries.—There are three small nurseries on the Feeder line at Dhamote, Bherthla and Rohti. That at Dhamote was all planted out but will be remade. The Bhoray nursery has been abandoned; a new nursery was just commenced at Rohti at end of year.

On the Kotla Branch are 6 nurseries (besides 2 or 3 smaller plots intermediate to the larger ones) at Mohorana, Raipur, Bundher, Bhaini, Jodhpur and Kot Bakhtu. The trees are mostly of one year's growth ; it was a bad habit to transplant very small trees of the first year which seldom came to anything. This arrangement has been stopped.

On the Ghuggar Branch the main nurseries is at Thui with a little area at Gujian which has not been satisfactorily worked. The trees are as above but the Thui nursery is making good progress.

On the Choa Branch a nursery was just being started at Dakraba.

On the Patial Navigation Channel a nursery was being started at Lihal.

There is difficulty about watering these nurseries. Raipur, Kot, Bakhtu, Thui, Gujran and Dakraba are watered by flow, the others by lift. The new plants are healthy and of good kinds, but small as yet because of former neglect of nurseries.

II.—Avenues.—The following table is the abstract of the avenues statement of last three years as far as known :—

Year.	Length of single lines stocked with trees or established plants at the beginning of the year.	Length of single lines planted during the year.	Length of single lines on which cultivation has failed on which trees or established plants have been destroyed or felled.	Length of single lines stocked with trees or established plants at the end of year.
	Feet.	*Feet.*	*Feet.*	*Feet.*
1884-85 ...	...	*No information.*	...	23,800
1885-86 ...	23,800	60,600	16,300	68,100
1886-87 ...	68,100	2,35,050	63,200	2,39,950

The list shows much letter than the reality. Except along the Patiala Nabha road there are no good line trees, the rest consist of small trees transplanted near bridges and masonry works or small trees transplanted or sown on considerable lengths which may indeed be alive but this is all that can be said, and probably the mass will come to nought for they were transplanted so small and so much injured by cattle that they are very miserable. The protection is so difficult that it is believed that it will be far best to transplant large trees and protect carefully as long as required than to attempt to raise from seed or transplant small plants.

In some cases the bridge ramp trees are doing well, greater efforts for protection are now made.

III.—Groves.—The groves are all on the spoil banks or space between the canal road and boundary, or in the compound.

The trees of any size are mostly kikar which have done well in places ; in a very few places shisham are doing well. A few siris trees are large but the better kinds of trees are only in compounds or quite small.

The Feeder line 4 miles was all sown with kikar but is in a patchy condition, hardly any part being thick with trees and hardly any parts quite bare, though there are large patches of kallar here and there which are very difficult to cultivate. Extensive kikar sowing in 1886-87 failed for want of rain.

The Kotla Branch 98 miles has been nearly all sown with kikar seed, but below mile 48 there is very little to be seen ; the drought always great has been intense the last two years. In a few places such as miles 17, 18, 19, the kikar is very thick, but generally the trees are not very close and only doing tolerably. The shisham at present are small and not numerous ; the better kinds of trees are all very small.

The trees in the compounds are doing well, especially at Mohorana and Bundher.

Watering is only occasionally possible. If watering direct from canal were permitted where it could be done with safety, it would facilitate matters. As it is, plantations are a great difficulty in the lower parts of the canal.

On the Ghaggar Branch (52 miles) all was sown with kikar, a few miles are thick, such as miles 23, 24, 45, 46, but generally the trees are not very thick and the shisham trees are not numerous, except in miles 25, 26, where they are small. The other trees are all very small.

On the Choa Branch, 24 miles, there is practically nothing. The soil is bad, the ground is high and sandy, or else there are deep borrow pits.

On the Patiala Navigation Channel, 6 miles, the trees that exist are of good size and of various kinds.

The following table shows the rainfall at several stations in the Division :—

Station.	Canal.	Rain-fall.			Average rain-fall.	
		1884-85.	1885-86.	1886-87.	Amount.	No. of years averaged.
Bherthla	Feeder Line ...	22·80	28·02	18·32	24·58	11 years.
Bundher	Kotla Branch ...	22·05	22·25	13·16	20·04	5 „
Gujran	Guggar „ ...	24·82	25 67	13·31	18·70	9 „
Ghaneta	Choa „ ...	28·62	35·36	18·54	23·41	7 „
Lehal	P. N. Channel ...	33·07	37·63	18·97	25·42	13 „

7. The following table shows the areas for the whole Division including old Independent Sub-Division :—

Years.	Area stocked with trees at beginning of year.	Area planted during the year.	Area on which cultivation has failed or trees have been cut down.	Area stocked with trees or plants at end of year.	Remarks.
1884-85	...	...	...	1,557	
1885-86	1,557	250	315	1,492	
1886-87	1,492	126	326	1,292	

The principal groves have been grown from broadcast sowing on the spoil banks where the earth was freshly cast up or in plough furrows 10 feet apart. This generally answered in fresh spoil, but not always; lately sowing has been in pits at 10 feet intervals, but this has not been successful. Where there is kallar soil or the land is covered with borrow pits it is of course the worst for plantations. Kikar seed is by far the most successful, it stands drought better and cattle (camels excepted) &c., do not destroy it as they destroy others.

Transplanting was principally used for chouki compounds and has answered well.

Thinning and felling was only carried out in miles 17, 18, 19 Kotla Branch, and on Patiala Navigation Channel, except the thinning out of seedlings which was required in a fair number of places especially on the Kotla Branch.

Fencing has been carried out as far as the wire permitted.

The line fence (agave) has been unsuccessful, kikar and phallai are now being tried. Protection is the great difficulty.

IV.—Expenditure.—The following table shows the expenditure incurred during the last three years :—

Year.	Nurseries.	Maintenance and Repairs.	Extension of avenues and groves.	Total.
	Rs.	Rs.	Rs.	Rs.
1884-85	2,802	6,219	.....	9,021
1885-86	1,670	5,159	.....	6,829
1886-87	1,739	1,972	4,336	8,047
Total ...	6,211	13,350	4,336	23,897
Mean ...	2,070	4,450	4,336	7,965

V.—Income.—The following table shows the income realized :—

Year.	*Avenues and groves.* Rs.
1884-85	... 2,367
1885-86	... 3,047
1886-87	... 1,807
Total	... 7,221

At present the income is very small ; there is little sale and not much to sell, still it will increase and the new Patiala Bhatinda Railway will create a demand, though it will be some time before it is a source of revenue.

PESHAWAR PROVINCIAL DIVISION.

It will be seen in the statement that during the three years there was a total increase of 192 miles of trees in the Division after deducting all losses. The trees were taken over or planted on the following roads :—

	Miles	Feet.
Lahore and Peshawar	27	2,774
Doaba outpost roads	42	2,800
Noushera and Murdan	27	3,470
Hazara trunk roads	32	1,600
Branch roads in Hazara District	62	
Total miles	190	10,644

Of the above number the 42½ miles on the Doaba outpost roads were transferred to this from the Military Works Division at Peshawar leaving a balance of 151½ miles planted out.

The trees consisted of the usual kind in each District. No record is kept of the several classes ; they were planted at intervals of 20 feet which gives a total in the three years of 39,500 trees.

5¾ acres of nurseries were kept up in the Peshawar District from which transplantings were effected. In the Hazara District there were no nurseries, the trees were obtained from other sources.

The total cost of all the planting operations was Rs. 6,916. This sum does not include the outlay in the first year 1884-85. In that year the outlay was charged to the ordinary maintenance of the roads referred to. The detail for each was as follows :—

Lahore and Peshawar roads	Rs.	1,718
Doaba outpost roads		3,197
Noushera and Murdan roads		626
Hazara trunk and Branch roads		1,375
Total Rs.		6,916

The cost per mile of trees was Rs. 36 and the cost per 100 trees was Rs. 13-12-0.

PESHAWAR PROVINCIAL DIVISION.

Statement showing the Progress made in road-side arboriculture during the three years ending 1886-87.

Year.	Trees planted.					Trees destroyed.					Balance at end of each year.					Remarks.
	Lahore and Peshawar roads.	Doaba Outpost roads.	Nanshera and Murdan roads.	Hazara Trunk roads.	Branch roads in Hazara District.	Lahore and Peshawar roads.	Doaba Outpost roads.	Nanshera and Murdan roads.	Hazara Trunk roads.	Branch roads in Hazara District.	Lahore and Peshawar roads.	Doaba Outpost roads.	Nanshera and Murdan roads.	Hazara Trunk roads.	Branch roads in Hazara District.	
								Avenues.								
	m. ft.	m. ft.	m. ft.	m. ft.	m. ft.	m. ft.	m. ft.	m. ft.	m. ft.	m. ft.	m. ft.	m. ft.	m. ft.	m. ft.	m. ft.	
8184-85 ...	2 2,540	...	...	2 35	1 192	0 3,150	...	...	0 3,600	0 2,760	1 4,670	...	...	1 1,714	0 390	Doaba Outpost roads were transferred to this Division at the end of 1886-87, hence no progress shown against them in 1884-85 1886-87.
1885-86 ...	4 0	...	7 1,720	33 1,573	65 678	2 6	...	1 5,110	2 1,797	3 2,615	1 5,274	...	5 1,890	30 5,056	61 3,341	
1886-87 ...	24 750	42 4,600	23 130	2 179	1 2,265	0 2,640	0 1,800	0 3,830	2 69	1 168	23 3,390	42 2,800	22 1,580	0 110	0 1,597	
								Nurseries.								
1884-85 ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	* Small square patches at intervals along the road-side.
1885-86 ...	...	...	2 41	...	...	...	...	...	...	...	...	...	2 41	...	...	
1886-87 ...	...	*40,000 sft.	2 41	...	...	—	...	...	...	...	...	...	2 41	...	...	
								Cost.								
1884-85 ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Cost of plantation during 1884-85 charged to ordinary maintenance.
1885-86 ...	840	...	237	615	including	Branch roads.		...	...	...	...	...	...	...	...	
1886-87 ...	878	3,197	389	760	...	...	...	...	...	...	...	...	...	...	...	

KOHAT PROVINCIAL DIVISION.

The operations of the past three years have been confined to planting out young trees in places where those formerly planted have died from climatic or other sources. A great man young plants failed on the Kohat and Khushalgarh road during 1886-87 owing to excessive drought, and their places are gradually being replaced by young plants from nurseries. There are very few trees on the road-side in this Division, and the arboriculture operations are extremely limited and scarcely worthy of report.

The expenditure on the three roads for 1886-87 is—

Kohat and Khushalgarh road 30 miles long	... Rs	669
Kohat and Bannu road in the Kohat District, 62 miles		5
Kohat and Hungu road, 26 miles	...	144
	Total Rs.	818

The trees that are planted are shisham, mulberry, siris, pipal, kikar and willow. The kikar and shisham thrive well and so do mulberry.

No new nurseries and groves have been established and no income has been realized.

The allotments on account of arboriculture are extremely small and admit of no extensive operations.

RAWALPINDI PROVINCIAL DIVISION.

During the past three years good progress has been made in tree-planting in the Rawalpindi Division. As however the work has been confined to filling in gaps in existing avenues and road-side groves, and in making small plantations alongside the road, where water stands all the year round, there has been but little to enter in the yearly returns submitted, which only take cognizance of entirely new groves or new lengths of avenues.

There is no special provision for arboriculture in this Division, the work is done out of the allotment made for the maintenance of the roads. The tree-planting in this Division is confined to the Lahore and Peshawar road.

Plantations.—The groves of trees in the different miles have been greatly improved during the period under review by the planting of shisham and kikar trees in the vacant places in them.

The kikar has been raised in trenches from seed. The shisham trees were put in when about 2 feet high.

Avenues.—Extensive planting of shisham and kikar trees has been made; 300 to 400 young trees having been planted in 31 different places.

The planting has nearly all been done in places where tanks were close to the road, and in many places advantage has been taken of earth being required for the road berms to excavate new tanks; these will in future years be utilized for tree-watering and at nearly all of them a few bargat trees have been planted and have taken root, these will be very useful for travellers to rest under when they are a few years old.

Nurseries.—Nurseries for shisham trees have been established in the plantations at miles 105, 113, 115, 130, 154, 186 and 218.

Deena nullah Bela plantation.—On the land pertaining to the Deena nullah training works, a plantation has been started and is now in a flourishing condition, there being about 2,500 or 3,000 young trees, (shisham, kikar, farash, drak and willow) in it. These trees are from 3 to 7 or 8 feet high and most of them healthy looking; attached to the plantation too is a small nursery.

UMBALLA PROVINCIAL DIVISION.

The Avenues in this Division are planted on the sides of the following roads :—

1. Grant Trunk Road from 1 to 161 miles.
2. Delhi and Sirsa Road for a length a little short of 16 miles.
3. Do. Gurgaon Road 158 miles.
4. Do. Muthra Road 1 to 28 miles.
5. Umballa and Kalka Road 34 miles.

GRAND TRUNK ROAD.

District.	Planted.	Failed.	Balances.
Delhi District.			
1884-85	13,200	1,450	11,750
1885-86	7,920	5,280	2,640
1886-87	26,000	8,000	12,000
Total. ...	41,120	14,730	26,390
Karnal District.			
1884-85	31,680	..	31,680
1885-86	...	50,393	—50,393
1886-87	15,100	17,520	—24,20
Total. ...	46,780	67,913	—21,133
Umballa District.			
1884-85	...	...	...
1885-86	10,560	1,050	9,510
1886-87	15,840	4,230	11,610
Total. ...	26,400	5,280	21,120

Grand Trunk Road.

The marginal tables will show that the net gain in length of Avenues in the Delhi Karnal and Umballa Districts has been 26,377 feet.

DELHI AND SIRSA ROAD.

	Planted.	Failed.	Balances.
1884-85	5,280	700	4,580
1885-86	6,500	...	6,500
1886-87	4,600	800	3,800
Total. ...	16,380	1,500	14,880

Delhi and Sirsa Road.

On the Delhi and Sirsa road, it will be seen that the increase in length of avenues has been 14,880 feet.

DELHI AND GURGAON ROAD.

	Planted.	Failed.	Balances.
1884-85	...	...	...
1885-86	...	790	790
1886-87	820	240	540
Total. ...	820	1,030	1,370

Delhi and Gurgaon Road.

On the Delhi and Gurgaon road, no plants were put down in 1884-85 and 1885-86, but in the latter year 790 feet were denuded of trees by a storm in the month of August. Of the 820 feet planted in 1886-87, 240 feet failed leaving a gain of only 580 feet, hence on this road there has been a diminution in length of avenues by 210 feet.

DELHI AND MUTHRA ROAD.

	Planted.	Failed.	Balances.
1884-85	3,800	700	3,100
1885-86	10,560	5,280	5,280
1886-87	5,280	1,600	3,680
Total. ...	19,640	7,580	12,060

Delhi and Muthra Road.

There has been an increase of 12,060 feet in length of avenues during the past three years.

The descriptions of trees planted have been shisham, mangoes, nim, siris, kikar, pipal and jaman.

The failures on the above roads have chiefly been due to two causes—

(I). The occurrence of saltpetre in the soil.

(II). Destruction of full grown trees by storms and cattle. The last cause was particularly active in 1885-86 during the movements of troops to and from the Camp of Exercise, more especially in the Karnal District.

Various means have been tried to keep off cattle from young plants, but none have been found to answer as well as the plan of digging a trench round the plant about 3 feet deep from which the earth is thrown on the outside to form a wall.

In soil impregnated with saltpetre the plan has been tried of digging a pit in which good earth is filled, and in this planting the young tree, but this has met with indifferent success.

	Planted.	Failed.	Balances.
1884-85	...	...	...
1885-86	33,720	...	33,720
1886-87	17,730	5,940	11,790
Total ...	51,450	5,940	45,510

Umballa and Kalka Road 34 miles.

From the table on the margin it will be seen that the increase in length of avenues on this road has been 45,510 feet.

The failure of 5,940 feet is owing to the storms during 1886-87.

Nurseries.—During the first two years of the period comprised in this report, no nurseries were kept up in the Delhi and Karnal sub-divisions, and none at all in the Pipli and Kalka roads sub-divisions for want of funds during 1884-85. Portions of land in the compounds of the road bungalows on the roads in this Division were set apart for this purpose and planted with shisham, nim, kikar, and siris trees.

The establishment employed on maintenance of avenues on the road-sides were utilized to tend the nurseries.

JULLUNDUR PROVINCIAL DIVISION.

Income.—There is an increase of Rs. 4,523 against that of last year, and it is due to the addition of Ludhiana and Ferozepore sub-divisions to this Division ; in these sub-divisions a great number of dry or otherwise fallen trees were sold.

Expenditure.—There is also an increase of Rs. 1,189 of expenditure on avenues than that of the preceding year for the reasons given above.

Young shisham and mulberry plants were procured partly from the nurseries under Civil Officers and partly from the nurseries of this Department and planted in room of old and fallen trees disposed of by public auction.

Groves.—No plot or area of land is set aside for planting groves in this Division.

Avenues.—The avenues in this Division were maintained by sanctioned gangs of cooly establishment during the year under report at a cost of Rs. 1,790.

The length of line planted during the year under review is 1,24,610 feet, and the trees which have failed on the line amounts to 6,030 feet ; the failure is mainly due to the havoc wrought by the camp followings of troops, and also to excessive drought.

Nurseries.—The area planted during the year is 6 roods and 5 poles or 6 roods 5 poles more than last year. All these nurseries have been planted with large number of shisham, mulberry, mangoe, kikar and date trees.

DERA ISMAIL KHAN PROVINCIAL DIVISION.

Two separate Divisions were formed, one at Bannu in 1885 and the other at Dera Ghaz Khan in 1886 called "Frontier roads Divisions." The roads in the Districts of Bannu and Dera Ghazi Khan have consequently been omitted from the return of this Division for 1886-87.

Trees inside of Fort Akalghar.—No new trees have been planted during the years 1885, 1886 and 1887 in this place, and the old ones have been maintained by employing an establishment of bhisties for the sole purpose of watering them ; they are all now in a flourishing condition.

Trees on outside of Fort Akalghar.—Cultivation of new trees outside of Fort Akalghar has been discontinued ; all trees transplantable have been taken up and planted on the sides of North-West Frontier road, "Section from Dera Ismail Khan to Peyzoo." The trees now in existence on this length are watered by Bhisti establishment and are in good condition.

Trees on road round Fort Akalghar.—No new planting of trees on this road has been attempted for the last three years. The trees already planted are watered from the Loonee water supply for which an allowance of Rs. 30 per month is paid to Deputy Commissioner. They are in a flourishing condition.

Road leading past Telegraph office to main Gate of Hornwork.—The trees on this road are included in the trees on the road round Fort Akalghar, and were erroneously shown under a separate sub-head. The necessary corrections have been made in the return of 1886-87.

Road from Dera Ismail Khan to Peyzoo called North-West Frontier road.—There is an avenue from the beginning of the road to the end nearly of the 4th mile. In the 1st mile which is only 2,000 feet in length there are more trees than one single avenue ; this length now resembles a jungle more than a planted avenue ; a number of trees were planted in 1886-87, but not in lengths. As trees here and there had died, they were replaced by transplantable ones from the trees outside of Fort Akalghar. These are watered from the Loonee water and are in good condition.

Trees on road from Dera Ismail Khan to Tibbee.—No new planting of trees for the last three years has been made on this road, but a number of khagul trees have grown spontaneously at different places. Some trees had died owing to an insufficient quantity of water being available from the Loonee. They were replaced by fresh ones. Now all the trees on this road are in a flourishing condition as loonee water is available for them in sufficient quantities.

STATEMENTS.

STATEMENT No. I. (a).

Progress Statement of Avenues in the Districts of the Punjab during the year 1886-87.

I.		II.	III.	IV.	V.	VI.	VII.		VIII.
Roads or Canal on which Avenues have been planted or are in course of construction.		Length of single lines stocked with trees or established plants at the beginning of the year.	Length of single lines planted during the year.	Length of single lines on which cultivation has failed or on which trees or established plants have been destroyed or felled.	Length of single lines stocked with trees or established plants at the end of the year.	Species of trees cultivated.	Rainfall.		REMARKS.
NAME OF.	*Total length in feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*		*Average.*	*During the year.*	
ARID.									
Muzaffargarh	15,77,919	7,47,898	36,960	3,39,038(*a*)	4,45,820	Shisham, farash, siris, kikar, ber.	6·0	2·2	(*a*) Includes 3,33,478 feet erroneously entered in previous returns.
Mooltan	15,40,715	4,14,753	36,444	68,224 (*b*)	3,82,973	Siris, shisham, pipal, bóhar, lasura, ber, jaman, phulai, mulberry, kikar, farash, amultas, okan, date, nim, bakain.	7·1	3·5	(*b*) Includes 53,186 feet erroneously shown in previous returns.
Dera Ghazi Khan	16,39,091	4,88,400	2,643	5,629 (*c*)	4,85,414	Shisham, kikar, siris, mangoes, pipal, eucalyptus, nim, tun, ber, gondni, cossia, mulberry, jaman.	7·1	3·2	(*c*) 5,629 feet are not shown in the opening balance by Deputy Commissioner, hence deducted in Column IV.
Dera Ismail Khan	10,87,680	3,19,047	12,556	10,967	3,20,636	Shisham, tamarisk, kikar, pipal, siris, ber, mulberry.	8·3	4·5	
Montgomery	4,80,500	83,050	...	3,050	80,000	Kikar, ber, jhand, shisham, siris.	10·4	8·7	

Jhang	15,21,155	2,60,145	1,210	15,055	2,46,300	Shisham, siris, ber, kikar, pipal, tut, banyan, tamarisk, date trees, amaltas, phulai, jhand, jaman, barna, mangoes and sohanjna.	10·8	5	
Bannu	7,37,997	6,79,629	13,840	32,378	6,61,091	Shisham, willow, mulberry, plum, kikar and Khagal.	12·9	9·4	Column IV includes 27,995 feet erroneously shown as stocked in last years return. Gaps filled in and old trees taken care of.
Shahpur	19,39,402	15,04,755	39,212	3,422	15,40,545	Shisham, kikar, mulberry, mangoes.	14·8	11·8	
Hissar	18,70,428	4,50,737	54,277	2,920	5,02,094	Kikar, shisham, shahtoot, pipal, gular, nim, siris &c.	15·8	19·3	Column III includes 49,240 feet previously stockd, but not shown in previous returns.
Ferozepore	38,63,640	23,43,079	1,40,641	...	24,83,720	Farash, kikar beri tut, tali &c.	22·0	14·9	
VERY DRY.									
Peshawar	5,50,345	1,49,640	1,44,581	14,375	2,79,846	Shisham, mulberry, dharek and ghaz.	13·5	6·4	43,941 feet planted during 1886-87. The rest 1,00,640 feet omitted to be shown in previous returns.
Kohat	12,000	9,567	17,128	2,505	24,190	Willow, shisham, mulberry and eucalyptus,	19·66	9·9	
Rohtak	21,91,200	8,33,495	43,490	35,853	8,41,132	Shisham, farash, nim, kikar, pipal, siris, bakain and mulberry.	20·6	20·0	
Lahore ...	17,43,443	5,63,592	1,54,738	7,140	7,11,190	Shisham, tut, mangoes, farash, jaman, ber, pipal, kikar, siris.	21·5	20·8	
Karnal ...	12,75,980	3,05,308	...	...	3,05,308	Shisham, siris, jamowah, pipal, banyan, mulberry, nim &c.	29·9	29·9	
DRY.									
Jhelum ...	12,50,970	9,13,620	1,57,800	3,880	10,67,540	Shisham, kikar, darek, mulberry, ber.	24·7	24	
Gujranwala ...	19,08,720	5,78,160	31,680	21,120	5,88,720	Shishum, kikar, phulai, dharek.	25·0	25·6	
Gurgaon	19,07,940	13,06,900	15,160	1,04,380	12,17,680	Shishum, nim, siris, jaman, gular, pipal, kikar, mangoes, khatta, farash.	26·6	20·8	
Carried over ...	2,70,99,125	1,19,51,775	9,02,360	6,69,936	1,21,84,199				

STATEMENT No. I. (a.)—*concluded.*

Progress Statement of Avenues in the Districts of the Punjab during the year 1886-87.—concluded.

I.		II.	III.	IV.	V.	VI.	VII.		VIII.
Roads or Canal on which Avenues have been planted or are in course of construction.		Length of single lines stocked with trees or established plants at the beginning of year.	Length of single lines planted during the year.	Length of single lines on which cultivation has failed or on which trees or established plants have been destroyed or felled.	Length of single lines stocked with trees or established plants at the end of year.	Species of trees cultivated.	Rainfall.		REMARKS.
NAME OF.	*Total length in feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*		*Average.*	*During the year.*	
Brought forward ...	2,70,99,125	1,19,517,75	9,02,360	6,69,936	1,21,84,199				
Amritsar	15,09,280	...	7,95,715	75,925	7,19,790	Shisham, siris, tut, kikar, jaman, lasura, kachnar, nim, ber, mangoes, tun.	25·9	25·5	Column III includes 7,09,345 feet previously stocked, but not shown in former returns—and 86,370 feet planted during the year under report.
Delhi.	11,86,620	8,76,606	24,870	10,000	8,91,476	...	27·5	31·7	
Ludhiana	5,77,445	5,45,325	5,000	...	5,50,325	Shisham, jaman, siris, mulberry, bor.	31·4	27·0	
Rawalpindi	48,96,718	20,91,050	88,413	1,11,101	20,68,362	Shisham, kikar, tut, phulah, drok, beri, kas, lasura, phagwara, tun, suru.	32·3	25	
Hoshiarpur	23,23,460	18,65,630	200	...	18,65,830	Tun, bahera, jaman, eucalyptus, patajan, pipal, bor, mahwa, shisham, khirni, kachnal &c.	34·6	40·7	
Jullundur	13,62,420	1,980,200	a273,600	54,320	21,99,480	Shisham, mangoes.	28·1	23·0	(a) Column III includes 105,600 feet previously stocked and now transferred from the P. W. D. to the District Board and hence shown here for the first time.

FOREST.									
Gujrat	5,32,000	3,81,000	7,000	3,000	3,85,000	Shisham.	29·4	23·9	
Gurdaspur	62,53,088	15,71,529	21,24,385	15,715	36,80,199	Mangoes, shisham, mulberry, kikar, taman, phula, siris, simbal, dhak.	32·0	48·3	Column III includes 20,42,315 feet previously stocked, but omitted to be shown in former returns.
Umballa ...	19,98,277	11,41,033	1,79,744	28,536	12,92,241	Shisham, nim, siris, tut, jaman, tun, mangoes, jaman, pipal, pilkhan.	35·3	31·9	Column III includes 1,26,420 feet previously stocked, but omitted in previous returns.
Sialkot	41,13,120	26,13,980	5,71,890	1,12,630	30,73,240	Shisham, mulberry, siris, kikar, mangoes, bhera, phulah, ber, dharek.	36·3	29·9	
Simla	5,000	1,500	3,500	...	5,000	Mohogany.	70·5	53·2	Column III includes 500 feet previously stocked, but omitted to be shown in former returns.
Hazara	2,69,799	3,58,109	4,140	2,68,761 *	93,488	Bakain, hasi, aloobukhara, aru, alcuha, bed mushk, bins, mangoes, locat and mulberry.	45·5	40·2	* Includes 2,64,621 feet erroneously shown in previous returns.
Kangra	32,33,896	31,07,568	1,44,209	94,745 *	31,57,032	Mangoes, mulberry, tun, jaman, tali, bamboo, dharek, simbal, kachnar, siris, shisham, oak, peer, apricot, peach, chestnut, &c.	123·7	123·0	Includes 2,452 feet, difference between balance shown in printed report for 1885-86 and District Return for 1886-87 not accounted for, presumably failures; and here entered as such.
TOTAL ...	5,53,60,248	2,84,85,305	51,25,026	14,44,669	3,21,65,662				

STATEMENT No. I. (b).

Progress Statement of Avenues in the Public Works Department, Canal Divisions of the Punjab, for 1886-87.

I.		II.	III.	IV.	V.	VI.	VII.		VIII.
Roads or canals on which avenues have been planted or are in course of construction.		Length of single lines stocked with trees or established plants at the beginning of year.	Length of single lines planted during year.	Length of single lines, &c. on which trees or established plants have been destroyed.	Length of single lines, &c. at the end of the year.	Species of trees cultivated.	Rainfall.		REMARKS.
	Total length in feet.	*Feet.*	*Feet.*	*Feet.*	*Feet.*		*Average.*	*During the year.*	
Upper Sutlej Division Inundation Canal	19,32,768	25,32,760	...	...	25,32,760	Kikar, farash and shisham.	8·30	7·60	
Western Jumna Canal, Karnal Division	10,93,900	11,82,000	6,870	10,000	78,870	Shisham, kikar, rubber, tun, mangoes gular.	31·92	39·90	
Do. do. Hansi Division ...	11,72,582	21,97,090	26,600	2,900	22,20,790	Shisham, tun, siris, bamboos, gular, jaman and mangoes.	20·6	21·4	
Do. do. Delhi ,, ...	63,64,600	41,83,950	76,450	*5,91,960	36,68,440	Shisham, tun, jaman, nim, kikar, mulberry, mangoes.	...	...	*Executive Engineer shows 20,800 feet failures to which 5,71,160 feet the difference between his closing balance of 1885-86 and opening balance of 1886-87 having been added in order to arrive at Column V. as now shown by Executive Engineer.
Independent Sub-Division Sirhind Canal	*Nil.*	*Nil.*	...	...	...	.....	...	...	
Chenab Canal Division ...	*Nil.*	*Nil.*	*Nil.*	...	...	.....	16·9	19·5	

Bari Doab Canal, 2nd Division ...	18,62,900	17,66,625	34,550	2,250	17,98,925	Shisham, kikar, farash, jaman, tun, mulberry, siris, farash, mangoes.	24·7	26·0	
Do. do. 1st ,, ...	7,69,221	13,22,000	5,000	...	13,27,000	Shisham, kikar, tun, siris, mangoes, mulberry.	22·9	23·8	
Swat River Canal ...	8,31,820	25,600	5,000*	...	30,600	Shisham, mulberry and willow.	23·8	9·3	Formerly stocked, but omitted in last return by Executive Engineer.
Lower Sutlej and Chenab Inundation Canals	49,51,000	49,51,000	...	...	49,51,000	Kikar, shisham, farash, pipal, jhand.	Not given.		
Indus Canal, Dera Ghazi Khan Division	25,49,520	8,75,810	56,000	21,100	9,10,710	Kikar, shisham, tun, siris.	4·9	1·3	
Muzaffargarh Canal Division ...	1,84,000	58,850	4,125	18,910	44,065	Shisham, siris, kikar tamarisk, pipal, banian, pomegranate, mangoes. jaman, figs, lasura, mulberry, ber.	5·9	2·1	
Sirhind Canal, 3rd ,, ...	8,56,760	1,40,518	3,03,176	46,424	3,97,270	Shisham, mangoes, jaman, tun, bamboos, siris, kikar.	...	...	
Ditto 4th ,, ...	16,64,400	1,41,000	2,29,900	38,000	3,32,900	Shisham, siris, kikar, and jaman.	12·9	14·6	
Ditto 5th ,, ...	7,92,534	68,100	2,35,050	63,200	2,39,950	Shisham, kikar, jaman, mangoes, tun, nim, amaltas kachnal imli, behra, pipal.			
Total ...	2,50,25,105	1,94,45,303	9,82,721	7,94,744	1,96,33,280				
Total for 1885-86 ...	2,72,93,918	1,03,41,194	93,61,509	2,57,400	1,94,45,303				

STATEMENT No. I. (c).

Progress Statement of Avenues in the Provincial Divisions P. W. D. of the Punjab, for 1886-87.

I.		II.	III.	IV.	V.	VI.	VII.		VIII.
Roads or canals on which avenues have been planted or are in course of construction.		Length of single lines &c., stocked with trees &c., at the beginning of the year.	Length of single lines planted during the year.	Length of single lines which have been destroyed or failed.	Length of single lines stocked with trees at the end of the year.	Species of trees cultivated.	Rainfall.		REMARKS.
	Total length in feet.	*Feet.*	*Feet.*	*Feet.*	*Feet.*		*Average.*	*During the year.*	
Bannu N.-W. Frontier Division ...	...	2,47,332	...	2,47,332	...	...	...	...	Here deducted because already included in Bannu District. Returns submitted by the Deputy Commissioner.
Rawalpindi „ ...	...	3,48,360	28,880*a*	1,76,880*b*	1,92,360	...	...	...	(*a*). Omitted from previous returns. (*b*). Transferred to Gujranwala Independent Sub-division.
Lahore „ ...	...	27,87,646	1,16,800	9,17,988*c*	19,86,458	...	...	...	(*c*). 66,200 feet transferred to Mooltan. 6,34,331 „ do. Gujranwala. 1,86,402 „ unaccounted for. 8,86,923
Amritsar „ ...	...	14,73,690	...	14,73,690	...	...	...	...	Amalgamated with other Divisions; hence deducted.
Gujranwala Independent Sub-Division.	...	...	8,61,771*d*	3,290	8,58,481	...	...	...	(*d*). The division being newly formed, 8,56,291 feet have been transferred to it. 5,480 feet only planted during the year.
Umballa Division ...	...	19,15,410	3,15,952*e*	3,22,000*f*	19,09,362	...	...	...	(*e*). Column III includes 2,41,182 feet due to errors of former returns. (*f*). Column IV includes 1,31,590 feet due to errors. 21,120 „ transferred to Jullundur Division. 1,31,966 „ unaccounted for. 2,84,676

Simla ...	*Nil.*		*Nil.*		*Nil.*				
Derajat Division ...	...	5,49,765	...	5,49,765	...	...	...	...	This Division has now been replaced by those of Dera Ghazi Khan and Dera Ismail Khan, though the returns of these latter do not account for the area here struck off. 4,88,400 feet being included in the returns of the Dera Ghazi Khan District.
Dera Ismail Khan Division ...	...	...	63,117*g*	847	62,270	...	...	...	(*g*). Column III includes 62,020 already stocked, presumably portion of the late Derajat Division.
Dera Ghazi Khan ,, ...	...	...	5,280*h*	...	5,280	...	...	...	(*h*). Presumably portion of the Derajat Division and already stocked.
Jullundur Division ...	...	15,55,592	1,45,730*j*	1,46,660*k*	15,54,662	...	...	...	(*j*). Column III includes 21,120 feet transferred from Umballa Division. (*k*). Column IV includes 1,05,600 ,, transferred to District control. 35,030 ,, unaccounted for. 1,40,630
Amritsar Pathankot Railway ...	...	5,57,773	...	5,57,773*l*	...	...	...	...	(*l*). The Amritsar Pathankot Railway having now been absorbed in the North-Western Railway system is here struck off as no returns have been received from the Railway Department Public Works.
Peshawar Division	...	7,44,931	2,91,725*m*	32,975	10,03,681	...	...	...	(*m*). Column III includes 2,23,220 feet presumably previously stocked, but omitted in previous returns.
Kohat North-West Frontier road Division.	...	48,378	...	216	48,162	...	...	...	
Mooltan Division	...	...	71,600*n*	3,600	68,000	...	...	...	(*n*). Column III includes 66,200 previously stocked, see note to Lahore Division.
Total ...	...	1,02,28,877	18,02,855*x*	44,33,016*y*	76,88,716	...	...	...	

(*x*). Only 3,96,662 feet actually planted.

(*y*). Only 1,15,347 feet actually failures.

STATEMENT No. II (a).

Progress Statement of Groves planted in the Districts of the Punjab during the year 1886-87.

Districts.	I. Area on which groves have been planted or are in course of construction.	II. Area stocked with trees or established plants at the beginning of the year.	III. Area planted during the year.	IV. Area on which cultivation has failed or on which trees have been destroyed or felled.	V. Area stocked with trees or established plants at the end of the year.	VI. Species of trees cultivated.	VII. Remarks.
	A. R. P.	*A. R. P.*	*A. R. P.*	*A. R. P.*	*A. R. P.*		
Muzaffargarh	201 0 11	197 2 17	0 0 2	0 0 3	197 2 16	Shisham, fruit trees.	
Mooltan	49 2 17	49 2 17	...	0 0 14	49 2 3	Siris, kikar, ber, shisham, farash, jand, phulai, tut, bohar, pipal.	
Dera Ghazi Khan	226 2 0	226 2 0	...	...	226 2 0	Shisham, kikar and fruit trees.	
Dera Ismail Khan	5 0 0	5 0 0	3 0 0	...	8 0 0	Shisham, tamarisk, pipal, kikar, dreg.	
Montgomery	30 2 0	28 0 0	3 2 0	0 2 0	31 0 0	Oranges, apples, arus, aluchas, kikar, ber, shisham siris, mangoes, jamans, pomegranates, figs, amruts and date trees.	
Jhang	391 2 10	382 0 0	2 0 0	97 0 18	286 3 22	Grafts of mangoes, banyan, pipal, ber, shisham, willow, gulnister red, siris, vine, fig trees, symbel, apple, eucalyptus, pomegranates, oranges, bedmushk, barna, alucha, plantain, peach, tut, apricot,	

					phulai, date trees, kikar, jhand, tamarisk amrut, peper tree, olive, malta, apricot, loquats.	
Bannu	1,084 0 0	1,084 0 0	...	...	1,084 0 0	Shisham, reeds kunda and red reed.	
Shahpur	308 1 2	231 0 0	44 1 1	4 1 19	270 3 22	Shisham, kikar, mulberry, bakain, anjir, pipal, mangoes, phulai, chil, &c.	19 acres 2 roods 1 pole shown in Column III is really previously stocked, but has been omitted from previous returns.
Hissar	53 1 15	53 1 15	...	...	53 1 15	Oranges, anar, rose tree, aru, lemon, nim, pipal, kikar, Shisham, siris.	
Ferozepore	543 3 7	409 2 22	28 0 0	...	437 2 22	Shisham, kikar, ber, farash, mangoes, jaman &c.	
Peshawar	12 0 0	12 0 0	...	...	12 0 0	Shisham, phulai, dharek, mulberry, ber, ghaz.	
Kohat	15 0 31	1 1 0	0 1 0	...	1 2 0	Mulberry, shisham, eucalyptus, oranges, loquats, willow and "kulyar."	
Rohtak	716 0 32	498 0 26	129 3 20	100 1 15	527 2 31	Farash, nim, pipal, siris, shisham, kikar, badbair.	
Lahore	7 1 32	7 0 34	0 0 38	...	7 1 32	shisham, farash and tut.	
Karnal	311 1 10	311 1 10	...	...	311 1 10	shisham, siris, pipal, banyan, nim, mangoes jaman, &c.	1,842 trees.
Jhelum	1 0 30	0 2 22	...	...	0 2 22	Not mentioned.	
Gujranwala	*Nil.*			*Nil.*	*Nil.*	...	
Gurgaon	2,350 3 0	24 0 0	1 0 20	...	25 0 20	Shisham, nim, siris, jaman and pipal.	*Column I includes*— A. R. P. Groves proper = 25 0 20 Hill land = 1,732 2 0 Afforestation waste = 423 3 15 Land bought for afforestation = 169 1 5 = 2,350 3 0

STATEMENT No. II (a).—*concluded.*

Progress Statement of Groves planted in the Districts of the Punjab during the year 1886-87.—concluded.

Districts.	I. Area on which groves have been planted or are in course of construction.	II. Area stocked with trees or established plants at the beginning of the year.	III. Area planted during the year.	IV. Area on which cultivation has failed or on which trees have been destroyed or felled.	V. Area stocked with trees or established plants at the end of the year.	VI. Species of trees cultivated.	VII. Remarks.
	A. R. P.	*A. R. P.*	*A. R. P.*	*A. R. P.*	*A. R. P.*		
Amritsar	3 1 0	...	3 1 0	...	3 1 0	Shisham, siris, tut, kikar &c.	3 acres 1 rood shown in Column III has been previously stocked, but omitted to be shown in previous returns.
Delhi	50 0 12	48 3 27	4 0 17	22 1 37	30 2 7	.....	
Ludhiana	...	149 0 0	...	...	149 0 0	Shisham, siris, mangoes, mulberry, blackberry, pipal and other fruit trees.	
Rawalpindi	390 2 12	167 0 0	193 2 37	3 0 0	357 2 37	Shisham, phulai, kikar and dharek.	Of 193 acres 2 roods 37 poles entered in Column III, 129 acres 2 roods and 37 poles, which were omitted from previous statements, have now been entered.
Hoshiarpur	3 0 38	3 0 38	...	...	3 0 38	Shisham, jaman, mangoes, tun, siris, dharek.	
Jullundur	208 2 27	206 2 2	4 0 25*	37 0 0	173 2 27	.....	* This area was omitted in last return.
Gujrat	*Nil.*			*Nil.*	*Nil.*		
Gurdaspur	31 2 11	31 2 11	...	1 2 0	30 0 11	Mangoes, shisham, tun, mulberry, jaman bassia tatifolia.	
Umballa	*Nil.*			*Nil.*	*Nil.*		

Sialkot	23 3 0	22 0 0	0 0 10	0 0 10	22 0 0	Siris, kikar, shisham dharek, mulberry, mangoes.
Simla	*Nil.*		*Nil.*		*Nil.*	
Hazara	49 3 25	28 3 20	5 0 20	1 1 0	32 3 0	Chir, gum, maju, rhin, darwa, akhrot, loquat, mulberry, hasi, alucha, chinar, amlok, sofeda, bakain, &c.
Kangra	*Nil.*	*Nil.*		*Nil.*		
TOTAL ...	7,068 3 2	4,178 1 21	422 2 30	237 2 36	4,333 1 15	

STATEMENT No. II. (b).

Progress Statement of Groves planted in the Canal Divisions of the Punjab during the year 1886-87.

Division.	I. Area on which groves have been planted or are in course of construction.	II. Area stocked with trees or established plants at the beginning of the year.	III. Area planted during the year.	IV. Area on which cultivation has failed or on which trees have been destroyed or felled.	V. Area stocked with trees or established plants at the end of the year.	VI. Species of trees cultivated.	VII. Remarks.
	A. R. P.	*A. R. P.*	*A. R. P.*	*A. R. P.*	*A. R. P.*		
Upper Sutlej Division Inundation Canal	39 3 8	35 0 0	4 3 8	...	39 3 8	Shisham, mulberry, pipal, bamboo, tun, kikar and siris.	
Western Jumna Karnal Division ...	456 1 0	1,020 0 0	2 1 32	...	1,022 1 32	Shisham, jaman, kikar, mangoes, willingtonia.	
Ditto Hansi do. ...	7 0 25	6 0 0	0 2 0	0 2 0	6 0 0	Mangoes.	
Ditto Delhi do. ...	77 3 24	77 0 0	23 1 27*	...	100 1 27	Shisham, tun, mangoes.	* 1 acre, 1 rood, 22 poles formerly stocked, but omitted from last return.
Independent Sub-Divn. Sirhind Canal	...	...	...	...	...		Amalgamated with Sirhind Canal 5th Division.
Chenab Canal Division	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*		
Bari Doab Canal, 2nd Division... ...	143 3 25	62 0 0	82 0 17	9 2 32	134 1 25	Shisham kikar, tun, phulai, mangoes, jaman, mulberry.	61 acre and 17 poles formerly stocked, but omitted from last return.
Ditto 1st do.	34 3 14	226 0 0	21 3 14	13 1 0	234 2 14	Shisham and kikar.	
Swat River Canal	69 0 0	...	69 0 0	...	69 0 0	Ditto.	
Lower Sutlej and Chenab, Inundation Canals.			*Nil.*		*Nil.*		
Indus Canal, Dera Ghazi Khan Division			*Nil.*		*Nil.*		
Muzaffargarh Canal Division ...			*Nil.*		*Nil.*		
Sirhind Canal, 3rd do. ...	5,899 0 6	3,985 0 0	2,465 0 0	2,358 2 5	4,091 1 35	Kikar, mulberry, shisham and ber.	
Ditto 4th do. ...	782 0 0	358 0 0	424 0 0	84 0 0	698 0 0	Siris, kikar, shisham, mangoes, orange, pipal and nim.	
Ditto 5th do. ...	3,163 0 0	1,492 0 0	126 0 0	326 0 0	1,292 0 0	Shisham, siris, kikar, nim, kachnal, jaman and mangoes.	Includes the old Independent Sub-Division, Sirhind Canal.
Total ...	10,672 3 22	7,261 0 0	3,219 0 18	2,791 3 37	7,688 0 21		

STATEMENT No. II (c).

Progress statement of Groves planted in the Provincial Divisions P. W. D. of the Punjab during the year 1886-87.

Divisions.	I. Area on which groves have been planted or are in course of construction.	II. Area stocked with trees or established plants at the beginning of the year.	III. Area planted during the year.	IV. Area on which cultivation has failed or on which trees have been destroyed.	V. Area stocked with trees or established plants at the end of the year.	VI. Species of trees cultivated.	VII. Remarks.
	A. R. P.	*A. R. P.*	*A. R. P.*	*A. R. P.*	*A. R. P.*		
Peshawar Division	2 1 25	2 1 25	...	...	2 1 25	Farash, phulai and shisham.	
Rawalpindi „	1,018 0 0	1,018 0 0	...	...	1,018 0 0	Kikar, shisham and phulai.	
Umballa „	...	1 2 19	...	1 2 19	...	.....	
Gujranwala Independent Sub-Division	1,086 0 0	1,086 0 0	...	...	1,086 0 0	.....	The Executive Engineer Gujranwala Independent Sub-Division has sent this form blank, but the Executive Engineer Rawalpindi Division remarks that this area has been transferred to that Division, hence entered against this new Division.
Lahore Division	72 0 0	...	26 0 0	...	26 0 0	Siris, shisham and kikar.	In Lahore Division Column III, 26 acres are previously stocked, but not shown in former returns.
Total ...	2,178 1 25	2,108 0 4	26 0 0	1 2 19	2,132 1 25		
Figures for 1885-86 ...	2113·03	2090·62	22·41	5	2108·03		

STATEMENT No. III (a.)

Progress Statement of Nurseries planted in the Districts of the Punjab during the year 1886-87.

District.	I. Total area of land set apart for nurseries.	II. Area stocked with plants at the beginning of the year.	III. Area sown or planted during the year.	IV. Area on which cultivation has failed or from which plants will be removed.	V. Area stocked with trees or established plants at the end of the year.	VI. Species of trees cultivated.	VII. Remarks.
	A. R. P.	*A. R. P.*	*A. R. P.*	*A. R. P.*	*A. R. P.*		
Muzaffargarh	33 0 1	31 3 27	...	0 0 22	31 3 5	Shisham.	
Mooltan	2 0 30	1 2 10	0 0 17	1 0 18	0 2 9	Shisham, Pipal, Bohar, Siris, Kikar.	
Dera Ghazi Khan	6 0 0	6 0 0	...	...	6 0 0	Shisham, Siris, Kikar, Ber, Tun, Jaman, Mangoes.	
Dera Ismail Khan	3 3 0	3 3 0	2 1 10	...	5 4 10	Tamarick, Dreg, Shisham Kikar, Siris.	
Montgomary	...	...	...	...	...	...	
Jhang	0 3 0	0 2 20	0 0 27	0 2 1	0 1 6	Mangoes, Pipal, Banyan, Shisham, Oranges, Siris, Pomegranate, Plantain, Bedmuskh, Pepper trees, &c.	
Bunnu	0 1 35	0 0 35	...	...	0 0 35	Shisham, Ber, Mulberry, Willow, Kikar, and Dharek.	
Shahpur	28 2 32	25 2 15	0 3 13	1 0 22	25 1 6	Shishem, mangoes, kikar, phulai, kachuol, bakin, Tut, pomagranate, and grapes.	

Rawalpindi	18 1 39	4 2 30	0 0 2	0 0 1	4 2 31	Shisham, mulberry, kikar, dharek and phulai.	
Hoshiarpur	2 3 4	2 3 4	...	...	2 3 4	Mangoes, shisham, jaman and eucalyptus.	
Jullundur	18 1 36	13 2 36	0 3 35	...	16 2 31	Shisham.	Includes 1 rood and 37 poles omitted in last year's return.
Gujrat	4 2 0	0 2 0	4 0 0	0 1 0	4 1 0	Shisham, and siris.	Column II of return for 1885-86 was erroneously left blank by Deputy Commissioner in reality there were then 4 acres and 2 roods stocked with plants, so this has been brought forward in this year's statement—Column III contains 4 acres previously stocked.
Gurdaspur	4 1 14	4 1 14	2 1 14	0 3 14	5 3 14	Mangoes, jaman, shisham, bassia tatifolia.	
Umballa	2 3 15	...	2 1 39	2 1 39	...	Shisham, siris, tut, nim, tun, jaman, pipal, pilkhani.	
Sialkot	180 2 6	32 0 13	1 3 22	1 3 23	32 0 12	Siris, mulberry, Mangoes, jaman, shisham, pipal, bohar.	
Simla	3 0 0	...	3 0 0	1 0 0	2 0 0	.....	Column III includes, 2 acres and 2 poles previously stocked, but omitted from former returns.
Hazara	286 3 20	13 0 10	3 3 5	3 0 35	13 2 20	Bakain, harir, alucha, bed-mushk, bins. aru, anar, chinar, akhrot, apple, ghanera, mangoes, khurmani, loquat, chara, mulberry.	
Kangra	44 0 15	41 1 39	1 1 17	0 3 4	42 0 12	Deodar, kail, pie, rai, tos, mangoes, tun, mulberry, shisham, pear.	1 acre 1 rood 15 poles omitted in previous returns, been added in Column III.
TOTAL ...	2031 0 30	1480 1 11	73 1 5	19 3 1	1536 1 15		

STATEMENT No. III (a).—*concluded.*

Progress Statement of Nurseries planted in the Districts of the Punjab during the year 1886-87.

District.	I. Total area of land set apart for nurseries.	II. Area stocked with plants at the beginning of the year.	III. Area sown or planted during the year.	IV. Area on which cultivation has failed or from which plants will be removed.	V. Area stocked with trees or established plants at the end of the year.	VI. Species of trees cultivated.	VII. Remarks
	A. R. P.	*A. R. P.*	*A. R. P.*	*A. R. P.*	*A. R. P.*		
Hissar	57 2 32	22 2 21	35 0 11	...	57 2 32	Date, nim, bor, shisham, kikar, shahtoot, tun, pipal, amaltas, beri, oranges, &c.	11,755 trees planted during th year. Column III includes 4 acres and 34 poles previously stocked, but omitted in last return.
Ferozepore	22 1 0	3 3 0	3 1 0	...	7 0 0	Mangoes, date, shisham, bakain, barh.	
Peshawar	6 0 29	5 2 7	0 2 22	...	6 0 29	Shisham, mulberry, ghaz, phulia, dharek.	
Kohat	...	*Nil.*	...	...	...		
Rohtak	5 3 21	1 3 27	1 0 37	1 0 37	1 3 27	Shisham, siris, nim, mulberry, bakain, ber, pipal, and kachnar.	
Lahore	3 2 25	1 2 21	1 3 24	0 2 6	2 3 39	Shisham, kikar and siris.	
Karnal	8 2 5	8 2 5	...	...	8 2 5	Shisham, siris, pipal nim, mangoes, jamowa, banyan &c.,	4809 trees fit for transplanting.
Jhelum	8 0 0	4 1 21	2 2 3	...	6 3 24	Mulberry, dharek, harir, fruits.	
Gujranwala	2 3 23	1 0 10	1 2 3	2 0 2	0 2 11	Shisham, pipal and kikar.	
Gurgoan	3 1 24	2 3 12	0 2 12	...	3 1 24	Nim, shisham, mangoes, jaman, gular, siris, pipal, fruit trees and shrubs.	
Amritsar	50 0 0	31 0 0	3 1 0	1 2 10	32 2 30	Not mentioned.	
Delhi	1208 3 6	1208 3 6	0 0 12	0 0 1	1208 3 17	.....	In addition to these there are 11 poles of Police nurseries stocked at the end of the year.
Ludhiana	13 0 18	5 3 28	...	0 2 86	5 1 22	Shisham, siris, mulberry, lemon, pomegranates and other fruit trees.	

STATEMENT No. III (b).

Progress Statement of Nurseries planted in the Canal Divisions, Public Works Department of the Punjab during the year 1886-87.

Division.	I. Total area of land set apart for nurseries.	II. Area stocked with trees or established plants at the beginning of the year.	III. Area planted during the year.	IV. Area on which cultivation has failed or from which plants will be removed.	V. Area stocked with trees or established plants at the end of the year.	VI. Species of trees cultivated.	VII. Remarks.
	A. R. P.	*A. R. P.*	*A. R. P.*	*A. R. P.*	*A. R. P.*		
Upper Sutlej Division Inundation Canal	*Nil.*		*Nil.*				
Western Jumna Canal Karnal Division ...	...	11 1 15	...	1 0 0	10 1 15	Kikar, shisham &c.	
Ditto Hansi Division ...	*46 0 0	11 2 6	3 2 22	3 2 27	11 2 1	Kikar, shisham, and tallord.	*17 acres and 34 poles submerged with full supply in Canal, and consequently unfitted for plantation.
Ditto Delhi do. ...	27 3 14	27 3 14	...	8 1 0	19 2 14	Shisham and kikar.	
Independent Sub-Division Sirhind Canal	...	...	...	...	...	.....	Amalgamated with Sirhind Canal 4th Division.
Chenab Canal Division ...	1 0 0	...	1 0 0	0 3 0	0 1 0	Shisham and jaman.	
Bari Doab Canal 2nd Division ...	0 1 24	44 0 29	0 0 5	43 3 10*	0 1 24	Mangoes, jaman, shisham.	*43 acres, 3 roods, 10 poles in Column IV were erroneously shown as stocked in last year's returns, hence deducted in this statement.
Ditto do. 1st do. ...	*Nil.*		*Nil.*		*Nil.*		
Swat River Canal	7 0 0	...	2 0 0	...	2 0 0	Shisham, mulberry, Chinar.	
Lower Sutlej and Chenab Inundation Canals	*Nil.*		*Nil.*		*Nil.*		
Indus Canal Dera Ghazi Khan Division	0 0 4	0 0 16	0 0 5	0 0 15	0 0 6	Shisham.	
Muzaffargarh Canal Division	*Nil.*		*Nil.*		*Nil.*		
Sirhind Canal 3rd do.	10 3 1	6 1 28	3 3 20*	0 1 2	10 0 6	Mangoes, jaman, tun, bamboos, palms, shisham, mulberry.	1 acre, 2 roods, 13 poles stocked formerly, but omitted from last return by the Executive Engineer.
Ditto 4th do.	17 3 8	3 1 0	15 0 0	1 3 32	16 1 8	Shisham and siris.	32 poles erroneously shown by Executive Engineer in last return, now deducted, failure only 1 acre 3 roods.
Ditto 5th do.	4 2 24	2 1 17*	2 1 16	2 18	3 0 15	Oranges, shisham, mangoes, jaman, tun, kachnal, siris, teak, sal, nim, kikar, behra.	*Includes old Independent Sub-Division Sirhind Canal. Column III also includes 10 poles erroneously omitted in previous returns.
Total ...	115 1 35	107 0 5	27 3 28	61 1 24	73 2 9		

STATEMENT No. III (c).

Progress Statement of Nurseries planted in the Provincial Divisions P. W. D. of the Punjab during the year 1886-87.

Division.	I. Total area of land set apart for nurseries.	II. Area stocked with plants at the beginning of the year.	III. Area sown or planted during the year.	IV. Area on which cultivation has failed or from which plants will be removed.	V. Area stocked with trees or established plants at the end of the year.	VI, Species of trees cultivated.	VII. Remarks.
	A. R. P.	*A. R. P.*	*A. R. P.*	*A. R. P.*	*A. R. P.*		
Peshawar Division ...	0 0 2	...	0 0 2	0 0 2	...	Shisham.	
Kohat N.-W. F. Road Division ...		*Nil.*	*Nil.*				
Bannu ditto do. ...	...	...	...	...	...	.....	Arboricultural operations are under the Deputy Commissioner of Bannu and shown in the District returns.
Rawalpindi Division ...	*Nil.*	*Nil.*		*Nil.*			
Lahore ,, ...	2 2 26	...	0 3 37	0 1 15	0 2 22	Shisham, siris, kikar, tut and bakain.	Column III includes 2 roods 4 poles stocked previously, but not shown in former returns.
Amritsar ,, ...	...	...	...	...	...	.....	Amalgamated with Lahore Division.
Umballa ,, ...	4 0 32	5 2 37	0 2 0	2 0 19	4 0 18	Shisham, nim, kikar, jaman, siris, bor, pipal, lasura, and mulberry.	Column IV includes 1 acre 2 roods 19 poles erroneously shown stocked at end of last year, hence deducted. Actual failures only 2 roods.
Delhi ,, ...	...	...	...	...	...	.....	Nurseries are planted in the compounds of road Bungalows.
Simla ,, ...		*Nil.*	*Nil.*				Amalgamated with Umballa Division.
Jullundur ,, ...	3 0 26	0 1 20	2 3 19	0 3 16	2 1 23	Shisham, mulberry, mangoes, bakain, dati.	Column III includes 1 acre, 1 rood, 14 poles previously stocked, but omitted in previous returns.
Amritsar Pathankot Railway ...		*Nil.*		*Nil.*			
Dera Ghazi Khan Division Dera Ismail Khan ,, ...	...	...	...	...	...	.....	6 acres shown at end of 1885-86; but as it is already included in the Dera Ghazi Khan District statement, hence omitted from Column II.
Gujranwala Independent Division ...		*Nil.*		*Nil.*			
Mooltan Division ...		*Nil.*		*Nil.*			
Total ...	10 0 6	6 0 17	4 1 18	3 1 12	7 0 23	.....	
Total for 1885-86 ...	13 0 5	9 1 36	2 3 33	0 1 12	12 0 17	.....	

STATEMENT No. IV. (a).

Statement showing income realized in the District of the Punjab during the year 1886-87.

Districts.	I.—Ornamental Gardens.							II.—Nurseries.							III.—Avenues and Groves.							IV.—Afforested Wastes.							Grand Total.
	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Muzaffargarh	...	...	...	355	...	...	78	...	...	...	...	...	...	82	39	482	123	7	...	...	96	...	...	...	...	..	...	...	1,262
Mooltan...	101	..	...	1,139	26	...	542	3	..	...	...	...	...	...	1,886	1	77	...	...	...	...	16	...	...	...	...	...	...	3,791
Dera Ghazi Khan	...	..	...	143	...	...	...	...	...	...	...	...	...	...	6	...	25	...	...	...	...	...	...	...	...	...	...	...	174
Dera Ismail Khan...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	...	...	...	...	73	...	...	...	...	...	...	...	...	81
Montgomery	...	...	...	80	...	105	...	...	...	...	...	...	...	...	...	...	53	320	...	355	36	...	...	...	...	...	...	...	949
Jhang	...	...	...	413	...	...	49	...	...	...	...	21	...	...	22	...	37	14	...	...	6	...	...	...	...	...	...	...	562
Bannu	...	...	...	313	29	25	3	...	...	...	...	...	...	...	183	...	...	...	...	4,452	...	...	...	...	...	...	3,847	...	8,852
Shahpur	...	...	...	1,258	13	70	33	...	...	...	...	...	...	...	1,613	400	...	...	...	208	12	...	...	...	...	...	...	...	3,607
Hissar	...	...	...	...	...	...	...	...	...	...	34	...	...	...	118	114	386	...	...	...	...	...	...	...	...	...	...	...	652
Ferozepore	...	...	...	...	...	...	...	...	...	...	...	...	...	...	563	...	1,889	232	..	231	...	...	...	...	...	...	...	...	2,915
Peshawar...	...	...	...	32	410	...	...	...	...	...	...	...	...	...	454	21	48	...	...	50	...	...	...	...	...	...	...	...	1,015
Kohat																													
Rohtak	...	...	...	17	...	...	...	...	...	...	...	...	...	...	12	...	1,129	...	...	...	...	...	...	...	...	...	...	...	1,158
Lahore	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	331	109	...	11	...	...	...	...	...	...	...	...	451
Karnal	...	...	...	...	...	...	...	...	...	...	34	...	...	...	...	...	42	...	...	...	...	...	...	...	...	...	...	...	76
Jhelum	...	...	...	526	38	10	190	135	...	654	...	...	...	41	...	...	...	...	..	...	...	...	...	...	...	...	...	...	1,594
Gujranwala...	...	...	...	589	...	6	...	...	...	...	...	...	...	...	...	...	450	...	..	...	...	...	...	...	...	...	...	...	1,045
Gurgaon	8	53	37	67	8	43	...	...	...	...	23	...	...	8	195	1,316	1,760	...	...	939	34	...	...	...	...	...	43	...	4,534
Amritsar	...	...	...	...	...	...	46	...	...	4	...	...	11	...	684	210	946	...	...	94	...	...	...	...	...	...	...	...	1,995
Delhi	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	678	...	...	...	...	...	...	...	...	...	...	...	678
Ludhiana	...	...	36	94	...	4	31	...	...	94	10	...	28	...	...	11	1,656	...	...	887	162	...	...	105	...	...	154	...	3,272
Rawalpindi...	...	...	25	879	62	989	1,083	...	...	...	...	...	...	...	...	...	211	1	...	2	...	...	...	9	...	...	...	...	3,261
Hoshiarpur...	8	15	25	307	5	...	31	...	...	...	...	...	...	...	317	...	2,105	266	...	128	400	...	...	...	...	...	...	...	3,607
Jullundur	4	...	1	661	71	...	31	...	...	7	149	117	15	3	135	...	5,063	3	...	1,280	1,824	...	...	...	...	...	...	...	9,364
Gujrat	...	...	...	78	...	...	...	...	...	...	...	...	...	...	1,200	3,500	3,396	...	...	81	...	...	...	...	...	...	...	...	8,255
Gurdaspur	...	288	5	180	10	22	21	..	189	5	167	...	...	...	127	506	1,810	225	...	104	263	...	...	...	...	...	...	...	3,922
Umballa	...	...	...	75	1	2	39	...	...	...	...	...	...	...	219	...	2,812	271	...	...	67	...	...	...	...	...	...	...	3,486
Sialkot	...	...	7	761	796	116	653	...	...	...	...	...	...	...	1,726	481	9,930	...	...	390	...	...	...	...	...	...	...	...	14,860
Simla	...	...	...	...	...	...	6,324	...	...	...	...	...	...	...	...	...	20	...	..	...	...	...	...	143	...	...	453	...	6,940
Hazara	7	46	...	1,054	5	6	47	68	...	8	328	144	1	13	122	3	10	1	...	72	3	...	...	...	...	...	68	...	2,006
Kangra	...	...	...	27	...	19	67	...	...	...	...	...	14	...	4	...	253	7	..	...	...	...	...	...	...	...	...	...	391
Total ...	128	402	136	9048	1,474	1,417	9,268	206	189	772	745	282	69	147	9,633	7,045	35,240	1,456	..	9,357	2,903	16	...	257	...	...	4,565	...	94,755

STATEMENT No. IV. (b).

Statement showing Income realized in the Canal Divisions of the Punjab during the year 1886-87.

Divisions.	I.—Ornamental Gardens.							II.—Nurseries.							III.—Avenues and Groves.							IV.—Afforested Waste.							Grand Total.
	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning.	Dead trees.	Fruits.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Upper Sutlej Division Inundation Canal	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	1,175	...	...	2,637	...	...	...	...	...	...	...	...	3,812
Western Jumna Canal, Karnal Division	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	254	530	...	76	1,582	...	...	..	...	...	...	...	2,442
Ditto Hansi do.	...	...	...	...	...	...	...	...	...	...	...	21	...	...	...	... [a]	5,243	232	...	...	...	...	...	...	...	...	588	61	6,145
Ditto Delhi do.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	701	702	702	700	...	714	30	...	...	...	...	...	...	...	3,549
Independent Sub-Division Sirhind Canal	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...
Chenab Canal Division	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bari Doab Canal, 2nd Division	...	..	...	55	...	...	...	...	...	...	..	...	...	...	182	260	5,046	...	...	5,471	...	...	...	...	...	...	...	...	11,014
Ditto 1st do.	...	...	...	...	...	...	...	...	...	...	.	...	...	...	5	3,591	2,491	209	...	4,256	45	...	...	...	...	...	...	...	10,597
Swat River Canal	...	...	...	...	...	...	...	...	...	...	.	...	...	...	...	22	...	...	...	...	...	...	...	...	...	...	...	...	22
Lower Sutlej and Chenab Inundation Canals	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	50	2,645	85	...	...	...	...	...	...	...	...	...	...	2,780
Indus Canal, Dera Ghazi Khan Division	...	...	...	...	...	...	...	...	...	...	.	...	...	...	...	427	924	...	...	...	...	...	...	...	...	...	...	...	1,351
Muzaffargarh Canal Division	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	438	2,647	68	...	1,576	2	...	...	...	...	...	...	...	4,731
Sirhind Canal 3rd Division	...	...	...	...	...	...	...	...	...	...	...	...	..	...	100	200	3,276	...	196	4,694	...	...	...	...	...	...	...	...	8,466
Ditto 4th do.	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	274	...	...	387	...	...	...	...	...	...	27	...	688
Ditto 5th do.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	302	1	209	...	...	1,295	...	...	...	...	...	...	...	...	1,807
Total ...	...	...	...	55	...	...	...	...	...	...	...	21	...	...	1,290	5,691	24,886	1,824	196	21,106	1,659	...	...	...	...	...	615	61	57,404

(*a*) Rs. 2,105 given in lump sum by Executive Engineer, hence divided equally, amalgamated with Sirhind Canal 5th Division.

STATEMENT No. IV. (c).

Statement showing Income realized in the Provincial Divisions P. W. D. of the Punjab during the year 1886-87.

Divisions.	I.—Ornamental Gardens.							II.—Nurseries.							III.—Avenues and Groves.							IV.—Afforested Wastes.							Grand Total.	Remarks.
	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning.	Dead trees.	Fruits.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning.	Dead trees.	Fruits.	Plants.	Grass.	Miscellaneous.	Lopping.	Thinning.	Dead trees.	Fruit.	Plants.	Grass.	Miscellaneous.		
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Peshawar Division	...	...	...	...	...	...	...	...	...	...	...	...	...	...	94	16	211	...	...	442	...	..	...	...	...	...	...	...	770	
Kohat „	...	...	..	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Bannu „	...	...	...	...	...	..	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Arboricultural operations are under the Deputy Commissioner of Bannu District.
Rawalpindi Division	...	...	...	...	...	...	...	...	...	...	...	...	...	...	32	...	1,001	2	...	1,755	...	...	...	...	...	...	...	...	2,790	
Lahore „	...	...	...	...	...	...	...	...	...	...	...	...	...	...	21	...	451	38	...	2,959	11	...	...	...	...	...	...	...	3,480	
Amritsar „	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Umballa „	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2,393	...	...	861	...	...	...	...	...	...	...	...	3,254	Amalgamated with Lahore Division
Dehli „	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	
Simla „				*Nil.*								*Nil.*								*Nil.*										Amalgamated.
Dera Ismail Khan Division ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	11	...	...	...	...	28	...	...	...	...	...	...	...	...	39	
Dera Ghazi Khan „ ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	23	...	...	...	...	...	...	...	...	...	...	...	...	...	23	
Jullundur Division	...	...	...	...	...	...	...	...	36	...	44	...	...	...	...	...	3,628	...	...	1,850	42	...	...	...	...	...	...	...	5,600	
Gujranwala Independent Division					*Nil.*						*Nil.*																			
Mooltan Division					*Nil.*						*Nil.*																			
Total. ...	...	...	...	...	...	...	...	...	36	...	44	...	...	...	181	16	7,684	40	...	7,902	53	...	...	...	...	...	...	...	15,956	
Total for 1885-86 ...	...	...	5	265	...	44	...	526	...	1,208	20	...	23	76	476	30	6,635	403	25	5,292	30	...	...	...	...	...	...	...	17,335	

STATEMENT No. V. (a.)

Statement showing Expenditure incurred on Arboricultural operations in the Districts of the Punjab during the year 1886-87.

Districts.	I.—Ornamental Gardens.		II.—Nurseries.		III.—Maintenance and Repairs of established Avenues and Groves.		IV.—Extension of Avenues and Groves.		V.—Afforestation of Waste Land.		Grand Total.	Surplus.	Deficit.	Remarks.
	A. Working.	B. Establishment.	A. Working.	B. Establishment.	A. Working.	B. Establishment.	A. Working.	B. Establishment.	A. Working.	B. Establishment.				
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Muzaffargarh	1,594	1,035	...	...	419	3,934	800	586	...	...	8,368	...	7,106	
Mooltan	3,962	2,821	141	356	1,372	1,302	...	...	...	...	9,954	...	6,163	
Dera Ghazi Khan	1,035	1,873	324	...	...	3,738	404	1,068	...	...	8,442	...	8,268	
Dera Ismail Khan...	...	...	959	...	...	1,457	...	...	...	...	2,416	...	2,335	
Montgomery	4,535	333	...	...	370	722	105	...	...	...	6,065	...	5,116	
Jhang	1,453	1,015	...	...	15	523	...	...	...	...	3,006	...	2,444	
Bannu	300	936	8	72	241	2,508	...	...	...	...	4,065	4,787	...	
Shahpur	797	2,675	...	...	...	707	...	...	...	...	4,179	...	572	
Hissar	...	...	...	2,479	...	756	...	...	...	...	3,235	...	2,583	
Ferozepore...	...	...	...	...	8,658	1,034	...	...	...	...	9,692	...	6,777	
Peshawar	901	2,490	...	...	144	2,305	200	...	...	...	6,040	...	5,025	
Kohat	...	...	...	...	...	...	...	307	...	...	307	...	307	
Rohtak	...	54	19	120	100	5,220	102	517	...	...	6,132	...	4,974	
Lahore	...	...	20	60	861	2,046	...	...	...	...	2,987	...	2,836	
Karnal	..	...	...	556	355	2,374	...	...	...	...	3,285	...	3,209	
Jhelum	1,185	1,883	533	1,042	28	752	19	61	...	...	5,503	...	3,909	
Gujranwala...	...	2,561	...	...	...	3,150	...	335	...	...	6,046	...	4,981	
Gurgaon	499	835	73	557	533	3,238	177	1,079	3,748	500	11,239	..	6,705	
Amritsar	101	315	135	506	296	7,715	...	...	...	...	9,065	...	7,073	
Delhi	...	...	...	...	...	...	...	...	201	1,899	2,100	...	1,422	
Ludhiana	1,268	462	551	227	2,933	768	...	...	...	...	6,209	...	2,937	
Rawalpindi...	1,805	2,631	...	...	91	48	...	...	...	...	4,575	...	1,314	
Hoshiarpur...	1,635	623	...	156	627	5,768	...	...	...	...	8,809	...	3,192	
Jullundur	2,154	1,236	741	1,277	65	1,607	150	596	...	...	7,826	1,538	...	
Gujrat	446	599	...	180	75	1,510	...	...	...	...	2,850	5,445	...	
Gurdaspur	1,039	936	176	312	251	4,608	30	180	...	...	7,522	...	3,610	
Umballa	749	393	...	...	378	1,921	...	...	...	...	3,441	45	...	
Sialkot	1,526	1,469	285	342	403	3,600	...	...	...	...	7,625	7,235	...	
Simla	3,531	2,428	...	...	3,591	1,740	74	...	...	...	11,364	...	4,423	
Hazara	166	156	84	471	25	72	...	...	78	120	1,172	834	...	
Kangra	12	396	...	300	150	330	200	279	...	...	1,667	...	1,276	
Total ...	30,693	30,155	4,049	9,013	21,981	65,453	2,261	5,008	4,027	2,519	1,75,159	...	98,557	

STATEMENT No. V. (b).

Statement showing Expenditure incurred on Arboricultural operations in the Canal Divisions of the Punjab during the year 1886-87.

Divisions.	I.—Ornamental Gardens.		II.—Nurseries.		III.—Maintenance & Repairs of Established Avenues & Groves.		IV.—Extension of Avenues & Groves.		V.—Afforesation of Waste Land.		Grand Total.	Surplus.	Deficit.	Remarks.
	A. Working.	B. Establishment.	A. Working.	B. Establishment.	A. Working.	B. Establishment.	A. Working.	B. Establishment.	A. Working.	B. Establishment.				
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Upper Sutlej Division Inundation Canal	...	...	...	...	767	...	290	...	...	...	1,057	2,755	...	
Western Jumna Canal, Karnal Division	...	...	...	150	267	777	618	...	...	...	1,812	630	...	
Do. Hansi Division ...	...	...	344	570	392	941	14	63	11	3	2,338	3,807	...	
Do. Delhi do. ...	...	...	...	...	960	834	225	144	...	...	2,163	1,386	...	
Independent Sub-Division Sirhind Canal	...	...	...	...	...	...	...	...	...	...	...	...	...	Amalgamated with Sirhind Canal, 5th Division.
Chenab Canal Division ...	...	...	...	...	...	...	...	...	975	...	975	...	975	
Bari Doab Canal, 2nd Division ...	315	132	...	...	1,406	836	286	264	...	...	3,239	7,775	...	
Do. do. 1st do. ...	...	...	...	...	466	1,268	2,146	1,200	...	...	5,080	5,517	...	
Swat River Canal	...	...	...	...	826*	827*	2,283†	2,283†	...	...	6,219	...	6,197	* 4,566 entered in lump sum by Executive Engineer in Column IV, hence divided equally between working and establishment.
Lower Sutlej and Chenab Inundation Canals	...	...	...	...	784	968	...	...	...	...	1,752	1,028	...	
Indus Canal, Dera Ghazi Khan Division	...	...	67	204	450	2,265	60	236	...	...	3,282	...	1,931	
Muzaffargah Canal Division ...	...	...	...	...	...	538	...	...	...	...	538	4,193	...	
Sirhind Canal, 3rd do. ...	...	...	1,683	...	3,836	...	3,244	...	...	...	8,763	...	297	* 1,653 entered in lump sum by Executive Engineer in Column III, hence divided equally between working and establishment.
Do. 4th do. ...	...	...	281	100	800	500	7,663	1,577	300	...	11,221	...	10,533	
Do. 5th do. ...	...	...	748	991	950	1,022	1,978	2,358	...	...	8,047	...	6,240	
Total ...	315	132	3,123	2,015	11,904	10,776	18,807	8,125	1,286	3	56,486	918	...	

STATEMENT No. V. (c).

Statement showing Expenditure incurred on Arboricultural operations in the Provincial Divisions, P. W. D. of the Punjab during the year 1886-87.

Divisions.	I.—Ornamental Gardens.		II.—Nurseries.		III.—Maintenance & Repairs of Established Avenues & Groves.		IV.—Extension of Avenues & Groves.		V.—Afforestation of Waste land.		Grand Total.	Surplus.	Deficit.	Remarks.
	A. Working.	B. Establishment.	A. Working.	B. Establishment.	A. Working.	B. Establishment.	A. Working.	B. Establishment.	A. Working.	B. Establishment.				
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Peshawar Division	...	...	...	...	...	5,030	90	103	...	...	5,223	...	4,453	
Kohat „	...	...	...	...	818	...	...	...	...	...	818	...	818	
Bannu „	...	...	...	...	...	...	...	...	...	...	...	...	...	Arboricultural operations are under the Deputy Commissioner of Bannu District.
Rawalpindi „	...	...	...	...	132	3,276	...	...	...	...	3,408	...	618	
Lahore „	26	90	...	2	22	1,491	108	230	...	...	1,969	1,511	...	
Amritsar „	...	..	...	...	...	...	...	...	...	...	...	...	...	Amalgamated.
Umballa „	...	...	72	495	691	1,545	165	120	...	...	3,088	166	...	
Delhi „	...	...	...	...	...	...	...	...	...	...	...	...	...	Ditto.
Simla „							*Nil*							
Dera Ismail Khan Division ...	...	...	...	...	...	1,001	...	...	...	...	1,001	...	962	
Dera Ghazi Khan „ ...	...	...	...	...	480	...	...	...	...	..	480	...	457	
Jullundur Division	...	...	183	636	1,104	1,040	...	183	...	...	3,146	2,454	...	
Gujranwala Independant Divn.							*Nil*							
Mooltan Division							*Nil*							
Total ...	26	90	255	1,133	3,247	13,383	363	636	...	...	19,133	...	3,177	
Total for 1885-86 ...	868	1,071	1,666	346	6,749	8,953	1,845	2,423	...	105	24,026	...	6,691	

PROGRESS REPORT

ON

ARBORICULTURE IN THE PUNJAB

For the three years 1887-88 to 1889-90.

Price Re. 1-8-0.

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CLASS

Proceedings of the Hon'ble the Lieutenant-Governor of the Punjab in the Forest Department, No. 555, dated 22nd December 1890.

READ—

The Report on Arboriculture in the Punjab during the years 1887 to 1890, submitted by the Officiating Conservator of Forests with his letter No. 2018, dated 5th November 1890.

REMARKS.—This Report, the second of the triennial series, was due with Government on the 1st of September, but was not received until December 8th. This delay is due to the want of punctuality with which the District Reports were submitted to the Conservator of Forests. The Deputy Commissioner of Umballa did not submit his report until three months after the prescribed date, and when submitted the report was found inaccurate in its statistics, and was unaccompanied by the map of the district, which the orders on the subject require to be furnished. Of the 58 reports from Districts and Public Works Divisions only 14 reached the Conservator's Office by the date fixed. The Conservator of Forests has given a list of dates of receipt of the several reports, and with reference to this list the Lieutenant-Governor desires that Commissioners of Divisions will call for and submit to Government the explanations of those Deputy Commissioners whose reports are shown to have been more than a month late. In regard to the reports of Public Works Officers, the Chief Engineers in the Public Works Department, Irrigation and General Branches, will be asked to issue such orders as will prevent a recurrence of the unpunctuality now noticed.

2. In the Report now received arboriculture is noticed under the following heads:—(*a*) Avenues, (*b*) Groves, (*c*) Plantations, (*d*) Nurseries and (*e*) Ornamental Gardens. In regard to *groves* and *plantations* it is to be noted that the distinction was introduced on the recommendation of the Special Committee on Arboriculture which reported on the subject in 1886. Groves are for the most part *topes* of trees grown on the road-side or round rest-houses and other buildings for the purpose of shade. Plantations include areas set apart for the growth of a crop of trees for timber. Areas undergoing treatment for afforestation should be shown under this head also. The area now being afforested in Shahpur should accordingly have been shown under this head in the returns of the present Report. For the purposes of classification districts are divided into Arid, Very Dry, Dry and Forest. The operations to which the Report relates are those carried on by (*a*) District Boards and Municipal Committees, (*b*) Officers of the Public Works Department, and (*c*) Individuals and Village Communities. The Report is not concerned with the operations of the Forest Department.

3. The system of triennial arboriculture reports was adopted by Government in the hope that local officers, in consideration of the relief so afforded, would bestow much more interest on the preparation of the report than it was possible to secure when the subject was treated in annual reports. The Lieutenant-Governor regrets to notice that in the majority of cases this expectation has not been realized. In perusing the present Report, His Honor has been struck with the numerous instances of negligence and inaccuracy which the Conservator has had to bring to notice. The occurrence in the Report of passages like the following is frequent :—

"Out of 98 miles of road planted 48 miles have failed, though no explanation of this percentage of failure has been given. The report for this district (Amritsar) is rather confusing, for, while the above facts are admitted, it is subsequently stated that only 14 per cent. of the trees that were planted have failed, and the number of trees planted is once quoted as 23,042 and again in the same paragraph as 10,380."

And again with reference to the Umballa report :—

"That portion of the report referring to road-side avenues deals with miles of single lines of trees instead of with miles of road. In addition to this the figures quoted in the report are entirely at variance with those entered in the statement, and it is therefore difficult to draw any reliable conclusions regarding operations in this district."

It is true confusion has been caused by the introduction of new statistical forms and the alteration of the unit of length for reporting purposes from the foot to

the mile, but this latter change was directed in the review of the last triennial report, and there was thus ample time for its introduction in practice.

4. But, though the work of recording and reporting results is still unsatisfactory, there is evidence to show that in most districts the results themselves are not inconsiderable, and that a real interest in arboricultural operations is being gradually evoked. The progress made during the triennial period under review may be summarized as follows. The length of road and canal avenues under the charge of District and Municipal Boards fully stocked with trees at the commencement of the year 1887-88 was 5,002 miles. At the close of the year 1889-90 6,124 miles of avenue were so planted, the progress made during the triennial period being thus represented by an increase of 1,122 miles in the length of tree avenues. During the same period Public Works Department Canal and Road Officers have added 259 and 217 miles respectively to the length of tree avenues on canals and roads under their charge. The area of groves and plantations at the commencement and at the close of the triennial period is shown in the following table :—

1	2	3	4
	At the commencement of 1887-88.	At the close of 1889-90.	+ / −
	Acres.	Acres.	Acres.
Under District and Municipal Boards	4,332	6,659	+ 2,327
Under Canal Officers	7,687	13,905	+ 6,318
Under Provincial Road Officers	2,339	814	− 1,525
Total	14,358	21,378	+ 7,020

The increase in the case of Canal Divisions and the decrease in the case of Provincial Road Divisions are said to be largely due to the correction of errors and omissions in the figures of column 2. The area appropriated for nurseries was at the close of the year 1889-90 288 acres in districts, 48 acres on canals and 18 acres on provincial roads. On the whole, the opinion may be confidently expressed that after all due allowance is made for errors and omissions—and these have been eliminated as far as possible by careful check in the Conservator's Office—the progress made during the three years under review is very satisfactory. A clearer comprehension of the work which is being done, and which still remains to accomplish, is to be got from the skeleton maps of districts and Public Works Divisions submitted with the Report. These maps, which have been examined with interest by the Lieutenant-Governor, should now be returned to the local officers for record and for use. They should be carefully preserved, as they enable a new officer, on taking over charge of a district or division, to comprehend at once the position as regards arboriculture in the area under his charge, and to direct his enquiries as to the progress of operations in accordance with the information so afforded.

5. The Conservator of Forests mentions as deserving of special commendation the efforts made towards the extension of arboriculture in the districts of Peshâwar, Montgomery, Shahpur, Gujrât and Hoshiârpur. As regards Montgomery, it would appear that the good results indicated by the returns are

in a large measure due to the inclusion of lengths and areas previously omitted by error. In the other districts mentioned by the Conservator, as also in the districts of Jullundur and Siálkot, the Lieutenant-Governor agrees that commendable energy in the promotion of arboriculture has been displayed by the District Boards and local officers concerned. In Pesháwar, which is classed among the very dry districts, the record is especially favourable. This district commenced the year 1887-88 with 26 miles of fully stocked avenues and ended in 1889-90 with 253 miles of roads fully stocked. In Hoshiárpur 411 miles out of a total mileage of communications of 440 miles have now been fully stocked. For the Hoshiárpur and Siálkot Districts working plans of arboricultural operations have been drawn up and approved by the Conservator of Forests. The Lieutenant-Governor desires to see the question of framing such working schemes considered in the case of all districts. In the arid districts in the south-west and west of the Province little progress has been made in the extension of arboriculture, and except in Jhang little interest appears to have been taken in the subject of late years. No doubt the difficulty in regard to water in these arid tracts, and the depredations of camels and goats, often produce failure and discouragement, but the fault will often be found to lie in a want of system which results in operations being carried on by fits and starts, too much being attempted in one year and nothing at all in the next. The principle which should guide operations in these districts is that the effectual protection of young trees should be guaranteed before any new work is commenced.

6. The destruction of full-grown road-side trees in the Ráwalpindi District noted in the Report is much to be regretted, although in some instances there would seem to be some reason for the dislike with which trees on the edge of fields are regarded by the people. It is curious that in Ráwalpindi the people should be so adversely disposed towards arboricultural operations, while in the neighbouring districts of Pesháwar and Kohát the advantages of tree-growing seem to be fully appreciated. In the Pesháwar District the owners of irrigated land plant trees along their irrigation channels, and since the partition of the Hashtnagar Maira, it is stated, the people are busy putting down trees and orchards. In Kohát a large number of trees is reported to have been planted at wells, tanks and mosques, and in both Kohát and Pesháwar the people have taken keenly to fruit-growing. The desirability of enlisting the sympathies of the people in favour of arboricultural operations should not be lost sight of by District Officers. In Mooltan the Deputy Commissioner speaks of an old custom, now in force in one tahsíl only, of getting the zamíndárs to water road-side trees near their wells, receiving payment at a fixed rate for each tree alive at the end of the season. This plan is mentioned in the Arboriculture Manual and is recommended for adoption where possible as being much less expensive than watering by hired "bhistís." The attention of the Commissioner of Deraját is invited to the remarks in the Bannu District Report regarding the appropriation by certain "influential persons" of water allowed at settlement for arboricultural purposes. Some of the persons referred to are members of the District Board, which body is said to take no interest in arboriculture. Tree-growing on road-sides in this district also meets with opposition from the adjoining zamíndárs, and in fact the position of affairs is anything but promising. The Lieutenant-Governor fails to see why this state of things should be accepted as inevitable, especially as it would appear that arboriculture was in this district at one time carried on with success.

7. Special attention has of late years been directed in the Punjab to the promotion of fruit culture, and the Lieutenant-Governor is pleased to learn from the present Report that the District Boards in many districts are taking an interest in the matter and making provision for the distribution to individuals of young plants and seed. The distribution of fruit trees from the Annandale Gardens, Simla, and the Lahore Government Gardens is noticed in the Annual Progress Report of the Director of Land Records and Agriculture and in the Report of the Lahore Agri-Horticultural Gardens. It is too early yet to say how far these operations have been attended with success, but the following facts reported from the districts promise well for the future. In Delhi there are now 400

young Persian date-palm trees from 1 to 3 feet high. There are said to be several thousands of these trees in Gurgaon, while in Ferozepore 15,000 date trees and 4,000 mango trees have been distributed. At Rohtak and at Hoshiárpur the areas of the public gardens have been extended, and in the additional space thus provided nurseries for the distribution of fruit trees to villagers have been laid down. In Kángra experiments are being made both with English fruit trees and with Persian date-palms. In Amritsar fruit trees are distributed to zamíndárs from the public nurseries free of cost. In Gurdáspur nurseries of fruit trees have been opened; the trees are sold to zamíndárs at a nominal price. The Civil Surgeon of Shahpur has under consideration a scheme for teaching zamíndárs the details of fruit culture, and good results are expected. In the Ráwalpindi District over 12,000 fruit trees have been distributed from the gardens at Ráwalpindi, Murree and elsewhere. In Pesháwar, as will be seen from the following extract from the report of that district, fruit culture is in a flourishing condition :—

"In respect of the cultivation of fruit trees, the people of Pesháwar require no encouragement as you are aware. And since the Railway has linked the valley with the Punjab, and fruit (grapes, apricots, peaches, melons) can be sent by rail profitably to Ráwalpindi, Murree, Jhelum, Siálkot and Lahore, the practice of laying down orchards and vineries is extending rapidly in the irrigated tracts. No doubt there is room for improvement in the quality of the fruit; but this is not a subject on which one is competent to offer advice and give instructions to the owners of orchards without professional training.

"It is very probable, however, that the wide market opened by the Railway will make growers keen to supply a good article, and that in the course of competition an improvement will gradually and insensibly be brought about."

That there is a wide market for fruit in the Punjab is undoubted. During the three years under review the Province imported 40 lakhs of rupees worth of fruit from trans-frontier countries. To satisfy a portion of this large demand from local sources is an object worth striving for, and efforts should be made to overcome the indifference of the people in regard to the quality of the fruit grown. This indifference is reported to have manifested itself in Kohát too, the people of which district are on the whole inclined to take up fruit culture as an industry, the soil and climate being favourable.

8. The following table gives the financial results of the three years under review :—

	Year.	Receipts.	Expenditure.	Surplus.	Deficit.
		Rs.	Rs.	Rs.	Rs.
Districts	1887-88	96,751	2,14,450	...	1,17,699
	1888-89	1,33,243	2,37,960	...	1,04,717
	1889-90	1,34,151	2,53,458	...	1,19,307
Canals	1887-88	75,458	71,092	4,366	...
	1888-89	83,449	73,221	10,228	...
	1889-90	1,01,335	73,024	28,311	...
Provincial Roads ...	1887-88	20,067	25,242	...	5,175
	1888-89	22,035	26,695	...	4,660
	1889-90	26,286	38,514	...	12,228

Compared with the previous triennial period both income and expenditure tend to increase as will appear from the following table. The figures for the

year 1884-85 in the case of Provincial Roads are not available, so the figures for the following year have been adopted in order to make the comparison:—

	Period.	Income.	Expenditure.	Surplus.	Deficit.
		Rs.	Rs.	Rs.	Rs.
Districts	1884—1887	1,92,847	4,36,519	...	2,43,645
	1887—1890	3,64,145	7,05,868	...	3,41,723
Canals	1884—1887	2,15,459	1,55,415	60,044	...
	1887—1890	2,60,242	2,17,337	42,905	...
Provincial Roads	1884—1887	50,626	67,185	...	16,559
	1887—1890	68,388	90,451	...	22,063

This increased expenditure on arboriculture, as the Conservator remarks, points to a greater amount of work done, and is therefore a matter of satisfaction. The District Boards and Municipal Acts recognize the planting and preservation of trees as a legitimate object to which the District and Municipal Fund may be applied. Taking the Punjab as a whole, arboriculture must be regarded as an object upon which expenditure is to be incurred and not as a source of revenue. The Lieutenant-Governor therefore agrees with the Conservator that the Commissioner of Delhi is wrong in deprecating expenditure upon road-side avenues on the ground that they do not pay financially, but there is of course much to be said for his argument that money can be more profitably spent in many districts in making groves and plantations which will pay financially and also improve the fuel and fodder supply of the country. Colonel Grey takes much interest in the afforestation of Rakhs, Bírs and waste lands, and under his guidance an interesting experiment is being conducted in one of the Hánsi Bírs by a native gentleman of Hánsi. Moreover, in the more favoured districts of the Province avenues do pay from a commercial point of view. An instance in the Delhi Division itself is the Umballa District, which during the triennial period under review yielded a surplus of income over expenditure amounting to Rs. 1,264, the total income being Rs. 10,587. In Siálkot the income from the sale of road-side trees and loppings amounted in the three years to Rs. 37,478 as against an expenditure of Rs. 21,266. In the older Canal Divisions, as might be expected, a very handsome profit is derived from the sale of timber and fuel, and on the recently constructed canals it is only a question of time for arboricultural operations to prove a fair financial success. In the drier districts of the Province tree-growing can of course never be expected to yield a profit. In the case of these what is to be looked for is that the results should in some degree be proportionate to the expenditure incurred. In Mooltan this object does not appear to have been secured. During the year 1889-90 an expenditure of Rs. 9,888 was incurred in the maintenance of 192 miles of avenue only and in the addition of a little over a mile to this length.

9. The Manual of Arboriculture referred to in His Honor's Review of the last triennial report has been brought out during the current year and is now

in the hands of District Officers. The technical portion, which occupies fully three-fourths of the Manual, is the work of Mr. W. E. D'Arcy of the Forest Department, now Assistant to the Inspector-General of Forests. The Lieutenant-Governor desires to place on record his appreciation of the valuable services rendered by Mr. D'Arcy in producing a work so well calculated to disseminate a knowledge of the main principles of tree-culture. Mr. D'Arcy undertook the preparation of the Manual, when employed as Deputy Conservator in this Province, in addition to his own duties, and carried out the revision of the proofs after he joined his present appointment. A considerable number of copies of the book have been supplied to other Governments,—in fact the edition has been exhausted. A translation, it is understood, is being arranged for by the Conservator of Forests.

10. In conclusion the Lieutenant-Governor desires to express his acknowledgments to the Offg. Conservator of Forests, Mr. Wild, for the present comprehensive report.

ORDER.—Ordered that the above remarks be printed and circulated with the Report as usual.

Also, that they be published in the *Punjab Government Gazette* and be forwarded with the usual number of copies of the Report to the Government of India in the Department of Revenue and Agriculture.

Also, that they be forwarded to the Secretary to Government, Public Works Department, and to the Joint-Secretary to Government, Irrigation Branch, with reference to paragraph 1, and to Mr. W. E. D'Arcy with reference to paragraph 9.

By order of the Hon'ble the Lieutenant-Governor,

R. G. THOMSON,

Offg. Revenue Secretary to Government, Punjab.

Punjab Government Press, Lahore—23-12-90—400.

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STATEMENT No. VII (*b*).

Expenditure on Arboriculture in the Canal Divisions during the years 1887-88 *to* 1889-90.

1	2	3	4	5	6	7	8	9	10	11	12	31
		Works.								Establishment		
		Ornamental gardens.		*Nurseries.*		*Plantation and afforestation.*		*Groves and avenues.*				
Canal Divisions.	Year.	Maintenance and repairs of existing gardens.	Extension of gardens.	Maintenance and repairs of existing nurseries.	Extension of nurseries.	Maintenance and repairs of existing plantations and afforestation.	Extension of plantations and afforestation.	Maintenance and repairs of existing groves and avenues.	Extension of groves and avenues.	General Supervising Establishment, including Office Establishment.	Total.	Remarks.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Bari Doab Canal, 1st Division.	1887-88	288	...	...	...	2,918	6,587	726	...	...	10,519	
	1888-89	...	...	...	...	2,380	8,572	558	...	...	11,510	
	1889-90	...	...	...	...	2,511	3,595	450	...	696	7,252	
Bari Doab Canal, 2nd Division.	1887-88	131	132	65	...	328	1,117	405	...	...	2,178	
	1888-89	413	115	4	236	327	1,089	542	...	...	2,726	
	1889-90	677	132	...	...	683	1,048	314	272	...	3,126	
Bari Doab Canal, 3rd Division.	1887-88 1888-89 1889-90	*Nil*	*Nil*	*Nil*	*Nil*	*Nil*	*Nil*	*Nil*	*Nil*	*Nil*	*Nil*	
Upper Sutlej Division, Inundation Canals.	1887-88	....	...	...	...	1,328	...	...	...	...	1,328	
	1888-89	...	...	...	...	1,468	...	...	...	...	1,468	
	1889-90	..	...	...	...	1,483	...	...	...	...	1,483	
Lower Sutlej and Chenab Division, Inundation Canals.	1887-88	1,052	...	...	...	...	...	1,026	...	...	2,078	Annual Statement for 1887-88, shows Rs. 2,001, now revised and corrected.
	1888-89	1,823	...	...	...	...	...	918	...	...	2,741	
	1889-90	...	356	55	...	...	1,391	1,135	...	...	2,937	Annual Statement for 1888-89, shows Rs. 3,400 now revised and corrected.
Dera Ghazi Khan Division, Indus Canals.	1887-88	...	...	426	...	...	...	3,602	206	...	4,234	
	1888-89	...	...	342	...	...	...	3,630	377	...	4,349	
	1889-90	...	...	262	...	...	...	3,656	430	138	4,486	
Muzaffargarh Canal Division.	1887-88	...	...	...	...	...	...	736	...	...	736	
	1888-89	...	...	...	...	...	...	1,354	...	...	1,354	
	1889-90	...	...	...	...	...	...	1,541	...	...	1,541	
Western Jumna Canal, Karnal Division.	1887-88	...	...	...	...	...	...	4,862	797	...	5,659	
	1888-89	...	...	...	...	...	...	5,659	...	...	5,659	Detail not obtainable by sub-heads, hence entered under one main head.
	1889-90	...	...	...	...	...	...	5,955	...	...	5,955	
Western Jumna Canal, Delhi Division.	1887-88	....	...	...	...	2,143	...	...	135	...	2,278	
	1888-89	...	...	...	...	2,761	...	...	197	...	2,958	
	1889-90	...	...	...	...	4,234	...	...	212	...	4,446	
Sirhind Canal, Ferozepur Division.	1887-88	...	...	79	65	...	...	12,284	3,570	...	15,998	
	1888-89	...	...	50	70	...	...	7,943	500	...	8,563	
	1889-90	...	...	50	50	6,437	1,317	60	40	121	8,075	
Sirhind Canal, Ludhaina Division.	1887-88	...	...	1,074	...	...	...	6,946	1,921	...	9,941	
	1888-89	...	...	985	...	...	...	7,980	1,049	...	10,014	
	1889-90	...	...	1,083	...	2,179	791	1,493	...	369	5,915	
Sirhind Canal, Patiala Division.	1887-88	...	...	...	...	...	...	...	...	...	7,131	Detail not obtainable by sub-heads.
	1888-89	...	...	...	...	...	...	...	...	...	16,676	
	1889-90	...	...	3,602	...	1,376	2,207	7,393	2,104	...	16,682	
Chenab Weir Division.	1887-88 1888-89 1889-90	*Nil*	*Nil*	*Nil*	*Nil*	*Nil*	*Nil*	*Nil*	*Nil*	*Nil*	*Nil*	
Chenab Canal Division.	1887-88	...	...	20	340	...	787	50	1,876	600	3,673	
	1888-89	...	...	30	...	...	29	86	768	600	1,513	
	1889-90	...	...	35	...	140	...	400	1,994	600	3,169	
Swat River Canal Division.	1887-88	...	...	...	...	2,745	...	...	2,594	...	5,339	
	1888-89	...	...	...	...	2,523	...	...	1,167	...	3,690	
	1889-90	...	...	...	...	3,924	1,291	...	2,742	...	7,957	
Total ...	1887-88	1,471	132	1,664	405	9,462	8,491	30,637	11,099	600	71,092	
	1888-89	2,236	115	1,411	306	9,459	9,690	28,670	4,058	600	73,221	
	1889-90	677	488	5,087	50	22,967	11,640	22,397	7,794	1,924	73,024	

STATEMENT No. VII (*e*).

Expenditure on Arboriculture in the Provincial Divisions during the years 1887-88 *to* 1889-90.

1	2	3	4	5	6	7	8	9	10	11	12	13
		Works.								Establishment.		
		Ornamental gardens.		*Nurseries.*		*Plantation and afforestation.*		*Groves and avenues.*				
Provincial Division.	Year.	Maintenance and repairs of existing gardens.	Extension of gardens.	Maintenance and repairs of existing nurseries.	Extension of nurseries.	Maintenance and repairs of existing plantations and afforestation.	Extension of plantations and afforestation.	Maintenance and repairs of existing groves and avenues.	Extension of groves and avenues.	General Supervising Establishment, including Office Establishment.	Total.	Remarks.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Peshawar Division	1887 88	...	...	...	245	...	...	5,046	3,051	...	8,342	
	1888-89	...	...	150	...	...	...	2,577	3,691	...	6,418	
	1889-90	...	...	...	586	...	...	2,633	2,558	...	5,777	
Rawalpindi Division	1887-88	...	...	...	...	...	...	1,651	1,119	...	2,770	
	1888-89	...	...	80	80	...	...	1,910	1,281	...	3,351	
	1889-90	24	24	125	95	...	...	4,070	2,469	...	6,807	
Kohat North-West Frontier Road Division.	1887-88	...	...	...	...	...	...	1,356	...	...	1,356	
	1888-89	...	...	...	...	...	...	1,105	...	...	1,105	
	1889-90	...	...	...	...	...	...	1,007	...	...	1,007	
Gujranwala Independent Sub-Division.	1887-88	...	...	...	...	...	...	...	...	1,126	1,126	Figures for 1887-88 were omitted erroneously in the Annual Statements.
	1888-89	...	...	...	...	...	...	...	...	1,265	1,265	
	1889-90	...	...	...	...	...	...	143	540	...	683	
Jullundur Division	1887-88	...	...	810	...	...	...	2,885	54	...	3,749	
	1888-89	...	...	406	...	...	...	2,283	123	...	2,812	
	1889-90	80	...	425	112	...	...	2,440	1,284	181	4,522	
Simla Division ...	1887-88	...	...	...	...	...	...	...	...	...	...	
	1888-89	...	2,154	...	...	...	...	...	...	...	2,154	Omitted erroneously in Annual Returns for 1888-89.
	1889-90	...	6,467	...	...	...	...	...	...	...	6,467	
Amballa Division ...	1887-88	...	...	270	...	...	...	1,442	136	1,081	2,929	
	1888-89	...	...	233	...	...	...	1,283	582	...	2,098	
	1889-90	...	...	131	38	...	...	2,095	...	...	2,264	
Delhi Division ...	1887-88	...	...	...	...	...	...	...	...	...	...	The figures for 1887-88 are included in the Amballa Division.
	1888-89	...	...	...	...	...	...	64	...	1,212	1,276	
	1889-90	...	...	...	...	1,422	...	...	...	327	1,749	
Dera Ismail Khan Division.	1887-88	...	...	...	...	...	...	...	...	825	825	
	1888-89	...	...	...	...	...	...	66	153	470	689	
	1889-90	...	...	...	200	...	...	143	...	681	1,024	
Dera Ghazi Khan Division.	1887-88	...	...	...	...	...	...	471	...	...	471	Annual Statement for 1887-88 not received in time hence the Provincial Statement was left blank.
	1888-89	...	...	...	...	...	...	1,462	...	...	1,462	
	1889-90	...	...	...	...	...	...	2,620	105	...	2,725	
Lahore Division ...	1887-88	41	208	18	308	343	798	1,424	64	...	3,204	
	1888-89	80	180	45	430	74	584	1,944	228	...	3,565	
	1889-90	318	30	240	...	140	...	3,820	579	...	5,127	
Mooltan Division ...	1887-88	...	...	...	...	...	...	320	150	...	470	
	1888-89	...	...	...	...	...	...	350	150	...	500	
	1889-90	...	...	...	...	...	...	269	33	60	362	
Total ...	1887-88	41	208	1,098	553	343	798	14,595	4,574	3,032	25,242	
	1888-89	80	2,334	914	510	74	584	13,044	6,208	2,947	26,695	
	1889-90	422	6,521	1,121	831	1,562	...	19,240	7,568	1,249	38,514	

No. 2018.

FROM

A. E. WILD, ESQUIRE,

Offg. Conservator of Forests, Punjab,

To

THE JUNIOR SECRETARY TO GOVERNMENT, PUNJAB.

Dated Lahore, 5th November 1890.

SIR,

I HAVE the honor to submit the Progress Report on Arboriculture in the Punjab for the triennial period 1887-88 to 1889-90.

The report was due to Government on the 1st September, and I regret I have again to crave indulgence in regard to its very late submission. The cause of this delay is attributable as usual to the unpunctual submission of the reports of district and Public Works Officers, which, generally speaking, did not reach my office until long after they were due. After receipt of the several reports which, in many instances, through incorrectness of figures, necessitate much correspondence and enquiry, there is in addition a large amount of compilation and check required, which entails no small amount of labour on my office at a time when it is fully occupied with other important work as the Annual Administration Report and the Budget Estimate.

I append the statement showing the dates of receipt in my office of the several reports, from which you will observe that no less than 10 reports were not received until well in August, while that from the Umballa District only came to hand on the 3rd October. The period reported on closes at the end of March, and the District reports should reach the Commissioner and Superintendent by the 15th June and my office by the 1st July. If these dates are adhered to and greater care taken in carrying out the instructions given in the Manual on Arboriculture for the preparation of the reports, I see no reason why there need be any delay in future, though the period is an inconvenient one for my office.

I would here further remark on the very negligent manner in which, I regret I must say as a rule, the several reports are still prepared notwithstanding the above-mentioned instructions. It surely is an easy matter to see that closing figures of one year are carried on as the opening figures of the following year, still in many instances this has been neglected.

The present report has been compiled, at least so far as my office is concerned, under the instructions issued with the Manual of Arboriculture which was published this year and issued in June last. Prior to this orders were passed on the report of the Special Committee of April 1886, which contained, among other matters, instructions regarding the substitution of miles for feet in lengths of roads, but unfortunately for the present report these instructions were not carried out in the statements submitted for 1887-88, and hence it has been impossible for me to review and compare the figures of the whole triennial period as completely as I could have desired, for while the present report deals with *miles* of *roads*, the previous one spoke of lengths of *single lines* of *trees in feet*, and it was found impracticable to convert one into the other, as in some instances a mile of road might have contained two or more miles of single lines, according as the road was lined with two or more sets of lines of trees.

Another new feature is that all reports are now accompanied by maps, while some Districts are also arranged for on well considered plans for five years which have received the approval of the Conservator. There has also been a slight modification in the arrangement of districts.

Plantations being for the first time treated separately, has necessitated slight modifications of the arrangement of subjects from that adopted in the last report, and I have also thought it expedient to discuss the general portion regarding nurseries along with avenues, groves and plantations instead of separately as previously followed. In the detail of work done, I have further separated groves from avenues and treated them along with plantations under a distinct sub-head.

The separation of plantations, it will be observed, has been effected by reducing the closing figures for groves for 1886-87 by the area entered as under plantations at the beginning of 1887-88. This is somewhat at variance with the instructions of the Manual, but it commended itself to me as being far simpler under the circumstances than making the correction in column 4, and I trust this may be an excuse for my divergence. The opening figures of the statements for groves added to those of the plantation statements agree with the closing figures of the statement for groves for 1886-87.

The efforts in regard to the extension and encouragement of arboriculture made in the Peshawar, Shahpur, Hoshiarpur, Montgomery and Gujrat Districts appear to me to merit special commendation :—

Statement showing dates of receipt of Arboricultural Report due in Conservator's Office on the 1st July 1890.

Districts and Divisions from which statements received.	Date of reminders issued.	Date of receipt of Report in Conservator's Office.
From Commissioner and Superintendent, Delhi Division.	No. 721, dated 2-7-90. R. I., dated 5-8-90. Telegram, dated 1-10-90.	.....
Rohtak	...	26-6-1890.
Umballa	Telegram, dated 20-8-90. Reply No. 386, dated 21-8-90. Ordinary Telegram, dated 4-9-90. Deferred do. dated 15-9-90. Reply No. 424, dated 16-9-90. Ordinary Telegram, dated 29-9-90. Reply Deferred Telegram, dated 29-9-90.	3-10-1890.
Hissar	...	10-7-1890.
Gurgaon	...	30-6-1890.
Karnal	...	7-7-1890.
Delhi	...	30-6-1890.
Simla	...	6-8-1890.
From Commissioner and Superintendent, Jullundur Division.	No. 721, dated 2-7-90. R. I., dated 5-8-90. Deferred Telegram, dated 25-8-90.	.....
Ludhiana	...	4-8-1890.
Ferozepore	...	4-8-1890.
Jullundur	...	4-8-1890.
Hoshiarpur	...	4-8-1890.
Kangra	Deferred Telegram, dated 20-8-90. Reply No. 346, dated 21-8-90.	31-8-1890.

Statement showing dates of receipt of Arboricultural Report, &c.—(continued).

Districts and Divisions from which statements received.	Date of reminders issued.	Date of receipt of Report in Conservator's Office.
From Commissioner and Superintendent, Lahore Division.	No. 721, dated 2-7-90.	.....
Gurdaspur	...	22-7-1890.
Amritsar	...	8-7-1890.
Lahore	...	28-6-1890.
Jhang	...	5-7-1890.
Montgomery	...	22-7-1890.
Multan	...	9-7-1890.
From Commissioner and Superintendent, Rawalpindi Division.	No. 721, dated 2-7-90.	.....
Rawalpindi	...	1-7-1890.
Jhelum	...	1-7-1890.
Shahpur	...	1-7-1890.
Gujrat	...	22-7-1890.
Gujranwala	...	5-7-1890.
Sialkot	...	1-7-1890.
From Commissioner and Superintendent, Derajat Division.	No. 721, dated 2-7-90.	.....
Bannu	...	14-7-1890.
Dera Ismail Khan	...	9-7-1890.
Muzaffargarh	...	9-7-1890.
Dera Ghazi Khan	...	23-7-1890.
From Commissioner and Superintendent, Peshawar Division.		
Peshawar	...	18-6-1890.
Hazara	...	28-6-1890.
Kohat	...	26-6-1890.
Superintending Engineer, Bari Doab Circle, Amritsar.	No. 721, dated 2-7-90. R. I., dated 5-8-90.	.....
1st Division, Bari Doab Canal	...	12-7-1890.
2nd ditto, ditto	Deferred telegram, dated 20-8-90.	25-8-1890.
3rd ditto, ditto	...	.....
Upper Sutlej Division	...	12-7-1890.
Superintending Engineer, Derajat Circle, Mooltan.		
Lower Sutlej and Chenab Division, Inundation Canals	...	29-5-1890.
Dera Ghazi Khan, Indus Canal	...	6-6-1890.
Muzaffargarh Inundation Canal Division ...	...	9-6-1890.

Statement showing dates of receipt of Arboricultural Report, &c.—(continued).

Districts and Divisions from which statements received.	Date of reminders issued.	Date of receipt of Report in Conservator's office.
IRRIGATION.		
SUPERINTENDING ENGINEER, CIS-SUTLEJ CIRCLE, UMBALLA.	No. 721, dated 2-7-90.	.....
Karnal Division, Western Jumna Canal ...	...	12-7-1890.
Delhi Division, ditto ...	...	12-7-1890.
Ferozepore Division, Sirhind Canal ...	...	12-7-1890.
Ludhiana Division, ditto ...	...	30-7-1890.
Patiala Division, ditto ...	...	12-7-1890.
SUPERINTENDENT OF WORKS, CHENAB CIRCLE, LAHORE.	No. 721, dated 2-7-90.	
Chenab Weir Division	...	.....
Chenab Canal Division	...	7-6-1890.
Swát River Canal Division	...	7-6-1890.
PUBLIC WORKS DEPARTMENT.		
SUPERINTENDING ENGINEER, 1ST CIRCLE, RAWALPINDI.	No. 721, dated 2-7-90.	
Peshawar Division	...	26-6-1890.
Rawalpindi	...	4-7-1890.
Kohat	...	8-7-1890.
Gujranwala Independent Sub-division ...	...	14-7-1890.
SUPERINTENDING ENGINEER, 2ND CIRCLE, UMBALLA.	No. 721, dated 2-7-90. R. I., dated 5-8-90. Deferred telegram, dated 15-9-90.	.....
Jullundur Division	...	22-7-1890.
Simla Division	Deferred telegram, dated 20-8-90.	25-8-1890.
Umballa Division	...	18-8-1890.
Delhi Independent Division	Deferred telegram, dated 20-8-90. Ordinary do., dated 4-9-90. Reply Deferred do., dated 5-9-90.	18-9-1890.
SUPERINTENDING ENGINEER, 3RD CIRCLE, LAHORE.	No. 721, dated 2-7-90. R. I., dated 5-8-90.	
Dera Ismail Khan Division	...	1-8-1890.
Dera Ghazi Khan Division	Deferred telegram, dated 20-8-90.	25-8-1890.
Mooltan Independent Division	...	13-5-1890.
Lahore Division	...	17-7-1890. 1-8-1890.

A.—GENERAL REMARKS REGARDING THE SEASONS.

1. The rainfall of the triennial period is exhibited in Statement No. 1, the figures of which have been obtained from the Agricultural Prospect Reports.

It will be observed that taking the period as a whole the average rainfall of the Province has been much below that of the past years, the deficiency being distributed over both the summer and winter months.

A scrutiny of the figures for each year of the period shows that in no one year has the normal fall been reached, and that as regards seasons the summer rains have fairly approached the average, while those of the winter months have greatly varied, especially during the last two years.

In 1887-88, both seasons contributed to the diminished fall, the winter months, however, in only a small degree. All classes of districts also participated, but the very dry and dry districts to a much smaller extent than the others. Of the 31 districts, 9 enjoyed an increased rainfall amounting in the Karnal District to as much as 17 inches on an average of 29·73; 22 were below the average, of which 5 did not experience more than one half of the usual fall.

In 1888-89 the fall was only little behind the average; there was, however, a marked deficiency in the summer rains, while those of the winter months largely exceeded the average. The arid and very dry districts experienced a smaller and the dry and forest districts a larger fall.

The year 1889-90 was one of exceptional scanty rainfall, notably during the winter. No class of district received its normal share. Every district was below its average with the exception of Jhelum, which experienced a slight increased fall of 1½ inches.

B.—DISTRICT ARBORICULTURE BY GOVERNMENT AGENCY.

(*a*).—General.

2. The following statement exhibits the work done on avenues during the three years 1887-88 to 1889-90.

1	2	3	4	5	6
Year.	Length of roads and canals suitable for avenues.	Length of roads and canals fully stocked with trees at beginning of year.	Length of roads and canals planted during the year.	Length of roads and canals which have failed during the year.	Length of roads and canals fully stocked with trees or plants alive at end of the year.
	Miles and decimals.	*Miles and decimals.*	*Miles and decimals.*	*Miles and decimals.*	*Miles and decimals.*
1887-88 ...	10,591·86	5,002·78	317·22	366·53	4,953·47
1888-89 ...	11,690·64	4,953·47	675·92	222·17	5,407·22
1889-90 ...	12,239·44	5,407·22	969·33	251·75	6,124·80
Total ...	34,521·94	15,363·47	1,962·47	840·45	16,485·49

The avenue statement to be submitted with the present report was a new one, and although explicit instructions were issued with regard to its preparation, still I regret to say that most of the statements as they originally reached me were very incorrectly compiled, and in my opinion they showed that not very much attention had been paid to the above-mentioned instructions by District Officers, indeed in many cases the figures entered in the statements do not agree with those quoted by District Officers in their reports, and as stated in the review of avenue operations, district by district, I do not consider that the figures now given are in all cases entirely reliable.

Owing to the entries in the return of avenues having been changed from "lengths of *single lines* of trees in feet" to "lengths of *roads* stocked with trees in miles," it is not possible for me to make any detailed comparison as regards the work done in this and the past triennial period.

Also I regret to say that after some correspondence on the subject, the Deputy Commissioner of Sialkot informed me that he was unable to supply correct figures in " miles of roads " for the years 1887-88 and 1888-89 : for the last year, however, I succeeded in obtaining figures said to be correct, and as will be seen from the statement of avenues, I have thought it best, for the purposes of the statement, to carry the length of roads fully stocked at the beginning of this year back through the other two, and to consider that no operations at all were undertaken in these first two years.

This of course is not correct, but still it enables me to carry on the form without a break through the triennial period. Under the circumstances it would be, I think, useless to attempt to review provincially the work of the first two years, but the statement given above shows that the year 1889-90 started with 5,407 miles of avenue stocked with trees, that during the year 969 miles were added to this, of which 252 miles failed, and that the length stocked at the end of the period amounted to 6,124 miles.

In the short note that the Commissioner of Delhi has submitted with the reports of his Division, he states that he " considers avenues a waste of time and money." I gather from the note that the Commissioner's objections to avenues are based on the fact that they are not profitable financially. The benefits of road-side avenues in this country can scarcely be doubted, and I think it is a great mistake to view this work from its financial aspect alone, for avenues, at any rate for some years after they are established, are seldom, if ever, a source of profit, nor is this the object with which their creation is undertaken.

It is satisfactory to note that good progress has been made in the length of road planted out during each year of the period under report. In 1887-88, 317 miles of avenue were planted, while the figures for 1888-89 and 1889-90 are 676 and 969 miles, respectively.

3. The statement below shows the progress made in groves :—

1	2	3	4	5	6
Year.	Area of groves at the beginning of the year.	Area planted or transferred from nurseries during the year.	Area of failures during the year.	Area stocked with trees or plants alive at end of the year.	Remarks.
	Acres and decimals.	Acres and decimals.	Acres and decimals.	Acres and decimals.	
1887-88 ...	2,789·43	231·96	241·10	2,780·29	
1888-89 ...	2,780·29	397·43	102·39	3,075·33	
1889-90 ...	3,075·33	1,445·18	282·88	4,237·63	
Total ...	8,645·05	2,074·57	626·37	10,093·25	

Comparison with the similar statement given in the last triennial report will show that there is a considerable discrepancy between the area then given as stocked at the end of the year 1886-87, and that now shown as stocked at the beginning of 1887-88. This is due to the issue of a new and separate statement for plantations, and to the fact that large areas previously classed as groves have now been transferred to the plantation statement. Now the plantation statement was a new form first issued in the year 1889-90, so that I think that the figures previously shewn as groves in the years 1887-88 and 1888-89 should not have been altered at all, but that the areas which it was desired to transfer to groves should have been struck out in column No. 5 of the form for 1889-90. Some officers have followed this course, while others have made the change in column No. 5 of the form for 1887-88, and others again have started the year 1887-88 with an area different from that with which they closed the year 1886-87, so that I have been unable to do anything but accept the figures as

submitted to me. The statement as it now stands shows that the year 1887-88 started with 2,789 acres of groves proper; that the additions during the triennial period amounted to 2,074 acres, the failures to 626 acres, and the area stocked at the end of the period to 4,237 acres.

The subjoined statement which is incorporated for the first time exhibits the operations carried out in plantations :—

1	2	3	4	5	6
Year.	Area taken up for planting at the beginning of the year.	Area successfully stocked at beginning of year.	Area sown or planted during the year.	Area of failures during the year.	Area stocked at end of the year.
	Acres and decimals.	Acres and decimals.	Acres and decimals.	Acres and decimals.	Acres and decimals.
1887-88 ...	3,870·67	1,543·91	317·84	135·75	1,726·00
1888-89 ...	3,870·17	1,726·00	202·01	174·68	1,753·33
1889-90 ...	5,022·42	1,753·33	906·77	237·28	2,422·82
Total ...	12,763·26	5,023·24	1,426·62	547·71	5,902·15

The year 1887-88 opens with an area of 1,543 acres stocked successfully which is simply the area transferred from groves.

The operations of the three years under review have increased this area by 880 acres, so that the period closes with an area of 2,423 acres of stocked plantations. Important variations and particular plantations will be mentioned hereafter when this subject is treated district by district. The statement below gives the available information with regard to nurseries :—

1	2	3	4	5	6
Year.	Area under nurseries at beginning of the year.	Area added during the year.	Area given up or transferred to groves during the year.	Area remaining at end of the year.	Remarks.
	Acres and decimals.	Acres and decimals.	Acres and decimals.	Acres and decimals.	
1887-88 ...	1,536·34	94·54	26·02	1,604·86	
1888-89 ...	1,604·86	58·41	19·35	1,643·92	
1889-90 ...	1,643·92	39·41	1,395·24	288·09	
Total ...	4,785·12	192·36	1,440·61	3,536·87	

This shows that the area under nurseries has fallen from 1,536 acres at the beginning of the year 1887-88 to 288 acres at the end of 1889-90. This very large decrease is mainly due to the exclusion in 1889-90 of the 1,208 acres from the Delhi District that were brought on as nurseries in the year 1886-87. Excluding this, however, altogether from the calculation it is to be regretted that the area under nurseries has fallen from 328 acres at the beginning of the period to 288 at its close; the exclusions which all occurred in the year 1889-90 took place mainly in the Muzaffargarh, Mooltan, Hissar, Sialkot and Kangra Districts, and will be commented on in due course.

(*b*).—Detail of work done.

I.—Avenues—Arid District.

4. During the last three years 18·83 miles of road were planted up in the *Muzaffargarh District*; of these 16·55 miles succeeded, thus bringing the

total length of roads stocked with trees at the end of 1889-90 up to 100·80 miles. Considering that the length of roads and canals suitable for avenues in this district amounts to nearly 300 miles, the progress made does not seem very great, and I notice that there has been a steady decrease in the length undertaken year by year, that in 1889-90 being only just over half of that attempted in 1887-88. The Deputy Commissioner's report is very meagre, and gives no details whatever of the work under this head, so I am unable to offer any remarks on the cause of this decrease, but the state of affairs does not appear to be very satisfactory.

5. In the *Multan District* also the progress made in the establishment of avenues has not been very great. The report states that nine miles of road were planted during the three years, and that out of these 4½ miles failed ; this, however, is incorrect, for the statements submitted show a length of 18·12 miles as planted and 8·78 miles as failed. This is a large percentage of failures, but in a district like Multan, where the rainfall is very scanty and where camels and goats are very numerous, the successful creation of road-side avenues is of course a very difficult matter. The Deputy Commissioner ascribes the small progress and the failure more to inadequate supervision and insufficient fencing of the young trees when put out than to the want of water. Proper fencing is in a pastoral district like this essential to success, for without it the young trees are ruined almost as soon as planted by cattle passing along the roads. I agree with the Deputy Commissioner that the main desideratum for the district is the creation of avenues along the most frequented roads, and it is hoped that the end of the next triennial period will show a greater amount of success in this direction.

6. In the *Dera Ghazi Khan District* sixty-three and three quarter miles of avenues were transferred in 1888-89 from the charge of the district authorities to the Public Works Department ; in addition to this, the only entry that the returns show is the planting out of four miles of road during the year 1887-88, but as the rainfall in 1889-90 was much below the average, and as the District Officer states in his report that he has "been unable to obtain statistics as to the exact length of avenues planted out during the three years under report," but that he believes "that a good deal has been done in that direction," I should imagine that the figures are not very reliable. No further details are given, and whatever the actual state of things in the district may be, the report at any rate is not very satisfactory as regards avenues.

7. Attempts for the further extension of avenues in the *Dera Ismail Khan District* have been characterised by complete failure, as the length of avenues existing at the end of 1889-90 was 2¼ miles less than the length at the beginning of 1887-88.

The greatest failure occurred in the year 1889-90, and though the report is silent on this subject, it must, I suppose, be attributed to the small rainfall of that year. The establishment of the district costs Rs. 2,000 per annum.

8. The *Montgomery District* starts the triennial period under review with a length of 15·15 miles of established avenues, and ends the same with a length of 133 miles, which, if correct, shows great progress and excellent results. This entry of 133 miles, however, contains 97·85 miles described, as omitted by error from the statements for the year 1888-89. Ninety-seven miles seems a very large length of road to stock with avenues in one year in an arid district like Montgomery, and as the Commissioner of the Lahore Division in forwarding the report states he does not believe there are 115 miles of road avenues in the whole of the district, I am inclined to think that there must be some mistake in this entry.

9. Although *Jhang* is an exceedingly difficult district for the creation of avenues, it is very satisfactory to be able to record a considerable improvement during the triennial period on the state of things noted in the last triennial report ; a good deal of care and attention seems to have been bestowed on the planting of road-side trees, with the result that the three years end with an increase of about 12 miles of avenues. The main difficulty lies in watering the young trees when planted, and the report shows that the efforts in this direction have been fairly satisfactory.

10. The report for the *Bannu District* shows that the main arboriculture work of the District is directed to the maintenance and extension of avenues; but from the Deputy Commissioner's remarks on the habits of the waziris and the zemindars who apparently strongly object to the formation of avenues, it is obvious that the matter is a very difficult one.

The report also states that nearly all the water allowed at settlement for arboriculture purposes has been assigned to various influential persons "who now grudge to give the trees their due share while making a handsome profit out of selling the water." I am not in a position to offer any opinion in this regard; but, unless there are strong reasons to the contrary, the water should I think be applied to its legitimate use.

During the last three years some seven miles have been added to the previous length of avenues.

11. The report of the *Shahpur District* only deals with the year 1889-90 which is to be regretted. Still the statements for the three years show that the efforts undertaken for the extension of avenues have been extremely successful, there having been an increase of 117 miles in the length of established avenues during this period. The figures, however, which are quoted by the Deputy Commissioner in his report do not agree with those given in the statements; the total given in the report shows the better result, but I have thought it best to adhere to the statements.

12. It is reported from the *Hissar District* that the inadequate rainfall made the seasons generally unfavourable for arboriculture during the three years under report, and this possibly accounts for the small length of 10·68 miles only that has been added to the road avenues of the District during this period.

The length of roads suitable for avenues in the District is over 390 miles, not one-third of which is at present stocked with trees, and from the small lengths that have yearly been taken in hand, it would appear that the District authorities do not take very much interest in this subject. The Deputy Commissioner further remarks in his report that in his opinion it is a waste of money to attempt the formation of avenues in the District, except at headquarters or at Tehsils, as at other places there can be little or no supervision, and the trees are planted only to die. I should think that the Deputy Commissioner could insist on the necessary supervision being exercised, and I cannot agree that the formation of avenues in an arid district like Hissar is a waste of money, especially as the Deputy Commissioner goes on to state in his report that the leaves of trees are greatly needed for fodder in the district.

VERY DRY DISTRICTS.

13. Nineteen miles have been added to the avenues of the *Ferozepore District* in the last three years.

The statement shows a failure of 257·35 miles of road in 1887-88, and an addition of 268·35 miles in 1888-89, but the report as submitted by the Deputy Commissioner gives no detail of this work.

The Commissioner and Superintendent in reviewing the report of this District has stated that the figures entered in the form give the length of single lines of trees and not the length of roads. Subsequent correspondence with the Deputy Commissioner has, however, proved that the figures as now submitted are correct, and that the returns for previous years were wrong in that they really exhibited the length of roads stocked in feet instead of the length of single lines of trees.

The above remark also applies to the *Ludhiana* and *Hoshiarpur Districts*.

14. During the last three years the *Peshawar District* has made very great progress in the planting of road-side avenues. The district commences the year 1887-88 with only 26 miles of fully stocked avenues and ends in 1889-90 with 253 miles of roads fully stocked with trees. This is an eminently satisfactory state of affairs, and is due to the great interest that the local officers have taken in the subject. The expenditure on this work has necessarily risen and

has amounted to Rs. 6,650 more than the expenditure on the same work in the last triennial period, but the results obtained would certainly seem to justify the expense incurred.

The remarks which the Deputy Commissioner has made in his report on this subject are very interesting, and I thoroughly concur with what he has said concerning the object of road-side arboriculture; the three desiderata, *viz.*, the maximun of shade in the shortest time, the minimum risk of loss of young trees, and the minimum cost of service (protection and watering) should invariably be very carefully considered when choosing a tree for this object.

15. There is not much to note concerning avenues in *Kohat* where the progress in the three years has not amounted to one mile; arboriculture in this district seems to be at a stand-still for want of funds, but as the Deputy Commissioner is sanguine of shortly obtaining an increased allotment, we may perhaps hope for an improvement in the furture. The Commissioner suggests the introduction of the Jhand and recommends that efforts should be made to stock up the roads by arranging for the growth of various indigenous trees and shrubs being allowed to advance to maturity which, if possible, would be a good plan.

16. The rainfall during the last two years in the *Rohtak District* has been much below the average, so that there has been little or no success in arboriculture operations. The Deputy Commissioner especially mentions the year 1889-90 as being marked by failure, but the statments submitted show that during this year nearly 26 miles of avenues were planted out, and that there were no failures, and as also the report says that there has been a marked decrease in planting operations during the last two years, while the statements show that during the year 1889-90, the length of road successfully planted was more than double that undertaken in 1887-88 and 1888-89. I am inclined to doubt the accuracy of the figures given in the statement.

17. In the *Lahore District* the results of the period under report compare favourably with those of the three years 1884-87; the failures too were small: out of 75½ miles of road planted up, 70 miles succeeded. Much, however, still remains to be done, for there are over 200 miles of roads in the district still without avenues. Tree-planting along roads under the control of the Lahore Municipality was confined to the filling up of gaps.

18. The result of avenue operations in the *Karnál District* in the three years has been an increase of 10 miles in the length of roads stocked, but in the case of this district also, I do not place much reliance on the accuracy of the figures of the statement, for they show that the whole of these 10 miles were planted out during the year 1889-90, and there are no entries in Column V of the statement for the years 1887-89, and none in Column VI for any of the three years: on the other hand, the statement which the Deputy Commissioner has submitted at the close of his report, shows that in the years 1887-88 and 1888-89, both plantings and failures were considerable. I agree with the District Officer in the importance of stocking up the Karnal-Kaithal road, and this work should be pushed on as much as possible.

Dry Districts.

19. The statement for the *Jhelum District* shows that road avenues have been increased by over 35 miles during the last three years: 13,988 trees were planted out, and of these 2,846 failed or 20·35 per cent., which is an increase of 3·55 per cent. of failures as compared with the returns for the last triennial period.

20. As the Commissioner remarks in his note, arboriculture in the *Gujranwala District* is not in a satisfactory condition, and though a considerable amount of money has been spent, not much effort has been made to increase the length of avenues in the district. The figures actually show a decrease of 25·50 miles of avenues, but the large failure recorded against the year 1889-90, includes 31·75 miles struck off to correct the return, so that there has really been a small increase in the three years. The present Deputy Commissioner is taking great interest in this subject, and I have lately arranged to place the

services of a Forester at his disposal, so that I think better results may be anticipated in the future.

21. Failures in *Gurgaon* have been small, and the progress made may be considered as fairly satisfactory. There must, however, be some mistake where the Deputy Commissioner remarks that 227 miles were planted during the year 1889-90; the statements certainly do not bear this out, for they show that the total addition to avenues during the three years has been 13 miles only.

22. In the *Amritsar District* the planting of avenues has not been attended with much success; out of 98 miles of road planted, 48 miles have failed, though no explanation of this percentage of failure has been given.

The report for this district is rather confusing, for while the above facts are admitted, it is subsequently stated that only 14 per cent. of the trees that were planted have failed, and the number of trees planted is once quoted as 23,042, and again in the same paragraph as 10,380.

23. Road-side planting in *Delhi* during the last three years has been, according to the statement submitted, far from successful, for the result has been a decrease of over a mile in the length of avenues. The District report throws no light on this, and indeed would seem to show that the operations on the various roads enumerated had been attended with success. No kikar seed was sown on any of the unmetalled roads in 1887-88, and the 10 miles of road in the Delhi Tehsil so sown in 1888-89 and 1889-90 failed: this operation, however, met with a greater measure of success in the Sunipat Tehsil where the seedlings on 24 out of the 38 miles sown in the last two years are reported to be doing well. Arrangements have been made for sowing kikar seed on 50 miles of these unmetalled roads annually in different parts of the district. If the seedlings will persist, this is of course a very much cheaper method than planting out 4 or 5 years old seedlings.

No addition was made to the avenues on the roads under the control of the Delhi Municipality during the period under report.

24. Road avenues in the *Jullundur District* have really been increased by 26 miles during the period under report, but the statements only show a total increase of 5 miles, 21 miles having been excluded to correct an error in the previous year's forms.

Although the rainfall of each of the three years, and especially that of 1889-90 was below the average, the failures among the trees planted have only amounted to about 13 per cent. and road-side arboriculture in the district is apparently in a forward condition. Considerable attention has been paid to this subject both in the extension of new and the maintenance of existing avenues.

25. There is nothing to note regarding the operations in *Ludhiana* for which district no details are given. The net addition to the avenues of the district amounts to 25 miles. The Deputy Commissioner in his report has expressed his views at some length on the subject of road-side avenues; briefly he is of opinion that their advantages are problematical and that they are not appreciated by the people, and his main objections are the cost of establishment and the difficulty of supervision. I agree with the Commissioner who in his review has disposed of these objections; it is, as there remarked, a mistake to view this subject merely from a financial stand-point.

26. The want of rain is a great difficulty that has to be contended with in the *Rawalpindi District*, but still the state of affairs exhibited by the progress statement of avenues is very bad, while that on which the Deputy Commissioner notes in his report is simply deplorable, not only in the lamentable want of supervision, but in the wanton destruction of existing and well-grown trees by the people. It is reported that the reason is that the trees were as a rule originally planted outside the road limits, and that they consequently occupy, and by their shade to a certain extent damage a portion of the fields on which the zemindar has to pay revenue. The scheme of arboriculture mentioned in the report as having been drawn up and agreed to by the District Board on the 15th of March 1890 will meet this difficulty as far as the future formation of new avenues is concerned, but the protection of existing avenues from further destruction apparently remains unprovided for. The zemindars undoubtedly have

a grievance, and I can only recommend the acquisition of strips of land along the road-sides. This matter should receive very careful consideration from the local Officers.

FOREST DISTRICTS.

27. The report of the *Gujrat District* is again very meagre, and I cannot agree with the Deputy Commissioner that the returns do not call for any special explanation, for they include an addition of 315 miles of avenues which it is stated should have been entered in the statement originally submitted for the year 1888-89.

If it is really true as the statements show that the length of avenues in the district has during the last three years been increased from 73 to 410 miles, then the result is very good indeed, but I am inclined to doubt the accuracy of the figures.

28. It is reported from the *Gurdaspur District* that the nurseries are now fully stocked with well established plants, and that it will be possible to carry on operations in the future on an extensive scale. The three years have resulted in an addition of 35 miles to avenues. No mention is made in the present report of complaints regarding the destruction of crops by avenue planting, so that I presume that the difficulty referred to in the last triennial report has been disposed of.

29. The report for the *Ambala District* was not received from the Commissioner of the Delhi Division until the 3rd of October.

That portion of the report referring to road-side avenues deals with miles of "single lines" of trees instead of with miles of road. In addition to this the figures quoted in the report are entirely at variance with those entered in the statement, and it is therefore difficult to draw any reliable conclusions regarding operations in this district.

30. For the *Sialkot District* I have only been able to obtain correct figures for the year 1889-90; but although the length of roads planted up during this year is small, still the Deputy Commissioner's report shows, as the Commissioner has remarked in his note, that this district is in a very satisfactory condition as regards avenues.

It is reported by the Secretary to the District Boards that a good deal of wilful damage is done to road-side trees by shepherds and villagers who lop off branches to feed their cattle and destroy young trees to prevent their growing up and injuring the fields through their shade; but the Deputy Commissioner has advocated a very good plan to remove the latter difficulty on the broad and not much used roads in the district. The scheme which is similar to that proposed for the Gurdaspur District in last report consists in keeping up only about 40 feet width of road and planting trees on either side of this width which where established will permit of the outer existing lines of trees being cut down and will thus releive the fields of the injury they are now said to undergo.

I am glad to learn that the District Board is doing its best to adhere to the arboriculture scheme which was sent to me for approval during 1888-89.

31. The report for the *Hoshiarpur District* only deals with the figures of 1889-90, during which year the considerable length of 53 miles was successfully added to the road avenues; nothing however is said in explanation of the fact that no operations at all were undertaken in 1887-88, and that those of 1888-89 only extended to 4·78 miles. With 411 miles stocked out of 440 miles available for avenues, the district must be said to be in a satisfactory condition, and as the plan of arboriculture operations for three years which was submitted to me in 1888 is being steadily adhered to, further improvement may be looked for.

32. The Avenue statement for the *Simla District* is blank, but the Deputy Commissioner has supplied an extract from the Report of the Simla

Municipality which exhibits the tree-planting operations that have been carried out in Simla itself during the year 1888-89.

33. In his review of the *Hazara District* report the Commissioner has dealt almost entirely with the past history of the road avenues which is interesting.

There is nothing to note concerning the operations of the past three years, the length of avenues stocked having been increased to a very slight extent only.

34. Notwithstanding the instructions contained in clause 3 of para. 5 of Part IV of the Manual Arboriculture, the Deputy Commissioner of the *Kangra District* has submitted the report Tehsil by Tehsil, instead of for the district as a whole.

The statement submitted show that about 63 miles of road were planted up during the years under report, and that some 43 miles of this length failed. The report states that 36 miles of failure are nominal as this length was transferred to Hamirpur and Nadaun, but the Commissioner in his review of the District report quotes the figure thus struck off as 18 miles. From this it would appear that either the Commissioner or the Deputy Commissioner are referring to miles of single lines of trees instead of the miles of road. The Commissioner is certainly doing this when he states that the "length of road stocked with trees at the beginning of 1887-88 was 599·62 miles," but I am inclined to think that the Deputy Commissioner is wrong in the matter of the amount struck off in correction of previous returns.

The total increase in the length of avenues in the district during the three years amounts, according to the statement, to a length of 19 miles.

II.—Groves and Plantations.

35. Groves in Muzaffargarh have increased by some 32 acres, but 28·87 of these were transferred from nurseries during the year 1889-90. Seed of the date palm was tried in the Station garden and in the district, but the report states that the experiment has not been very successful.

36. In Dera Ghazi Khan 135 acres were transferred from groves to plantations, and in addition 81 acres of groves were made over to the charge of the Public Works Department.

37. The Montgomery report states that 715 acres of groves have now been included in the return, and that the whole of this amount is due to the correction of previous omissions. This seems a large area to have been previously left out, and I would invite attention to remarks that I have made concerning a similar increase in the avenues of this district.

38. Two hundred and sixty-one acres in Jhang and 1,084 acres in Bannu were transferred from groves to plantations. The Shahpur District shows an increase of 280 acres to groves. The report which deals with the figures of the last year only states that no operations were carried out in groves, but this is certainly not borne out by the statements submitted. It is also reported that the progress of afforesting the Sakesar Hill has not been satisfactory owing to want of rain: the surviving chil trees are however in a fair way to establish themselves.

39. In the Hissar District groves have increased by 89·19 acres, of this 30·76 acres were transferred from nurseries, and the remainder was successfully planted during the three years. An irrigated plantation of 21·37 acres was established at Hansi Bir during the year 1889-90.

40. The Ferozepur statements show a total increase of 21 acres in groves during the three years: no explanation however is offered of the large decrease during 1887-88, nor of that of the following year. The plantation statement for this district is blank, yet the report states that operations in the Kheruwala Government plantation have not progressed much; the figures for this plantation should have been included.

41. Groves in Kohat have increased by 10 acres. It is satisfactory to note that the efforts to establish the date palm in this district have so far been met with a considerable measure of success : the report states that the seedlings when ready for transplanting will be put out in Khawara and Zira Jungles and other suitable places : hopes are entertained of the ultimate success of this tree in this district.

42. In the Rohtak District over 166 acres of groves were sown or planted, but of these only 15 acres succeeded. It is also reported that the afforestation of the reserved portions of the Sunari and Chhukawas Birs has not progressed satisfactorily owing to the want of rain. Should the rainfall be sufficient, further efforts in this direction are promised.

43. Date palm seed to the amount of one maund was obtained and distributed to the principal residents in Karnal, but no reports as to its success or otherwise have yet been received.

44. In Gujranwala also experiments were made with the date palm, but in this district they were not very successful.

45. Groves in Gurgaon have increased by 260 acres, but as explained in the report, a large portion of this is due to the inclusion under groves of areas that were not previously so classed. One hundred and sixty-four decimal eighty-four acres were in the year 1887-88 transferred from groves to plantations, and very considerable efforts to increase this were made. The Deputy Commissioner divides these plantations into those in the plains and those in the Hills, and it is stated that the results of the efforts made in the former have been disappointing as failures were large; this is attributed to short rainfall and to insufficient supervision. On the other hand, the progress in the Hill areas has been very satisfactory especially in the protected areas at Sohna and Bhundsi.

46. A failure of 20 acres took place in the groves of the Delhi District, but 463 acres are brought on under plantations which were omitted from previous returns ; in addition to this 160 acres were planted in the year 1889-90, of which 45 acres failed.

47. One hundred and seventy-three decimal sixty-seven acres were in 1887-88 transferred from groves to plantations in the Jullundur District, and 67 acres were added to this during the period under report: failures of sowings and river action however caused a decrease of 80·99 acres, so that the year 1889-90 ends with only 159·68 acres stocked.

48. There has been an increase of 203 acres to groves in the Ludhiana District, which is due to the inclusion of certain rakh land under this head.

49. In the Gurdaspur District 25 acres were transferred from groves to plantations.

50. The *Umballa District* report quotes certain figures as the area operated on during the three years ; this same area was however previously entered under nurseries, it seems therefore that the 4·15 acres which were established as nurseries at the beginning of 1889-90 were, during the year, transferred to groves.

51. The decrease in area of the groves in the Sialkot is due to the exclusion from the returns of the area occupied by the Gulu Shah fair, which it is stated should never have been classed as a grove.

52. The statement for the Hoshiarpur District shows an increase of 12 acres to groves, but as the report states that this area is a portion of a garden which has been stocked with fruit trees with a view to supplement the supply of young trees available from the District garden for distribution, I do not think this area should have been entered as a grove.

53. The *Simla District* ends the period under reveiw with 51·50 acres of plantations which it is explained are entirely devoted to the cultivation of fruit trees ; these figures do not include the Annandale gardens.

54. The *Hazara District* had 28·25 acres of plantation at the end of 1889-90 ; of this 27·25 were due to the inclusion in the returns of previous omissions, while the remaining acre was successfully stocked during the year. This area is situated in the civil rakh and on the Sorban hill in both of which places more or less successful efforts are being made towards afforestation.

55. There were no groves in the *Kangra District* at the end of 1887-88, but during 1888-89 and 1889-90, 1·45 acres were established in the Kangra Tehsil, and 17·60 acres on the Nurpur Dâk Bungalow Hill. The statement represents the whole of the latter work to have been carried out during 1889-90, but the special report on the experiment attached to the District report shows that a considerable sum of money was spent on the work during 1888-89.

Plantations have also been created to the extent of 58·13 acres during 1889-90 in this district; of this however 39·16 acres were transferred from the District Board nurseries, and 9·60 acres are due to correction of previous omissions.

III.—Nurseries.

56. No new nurseries have been formed in Muzaffargarh, and although 28·87 acres have been transferred to groves, it is reported that the existing area is sufficient for the wants of the district.

57. Fifteen acres have been excluded from the nurseries in Mooltan by the correction of previous returns, while three new ones have been established.

58. No nurseries exist in the *Montgomery District*, nor do any efforts appear to have been made towards the establishment of any. In Jhang the report states the existing nurseries are sufficient.

59. It is not possible to do anything as regards the creation of new nurseries in Bannu on account of the water difficulty which has been briefly referred to in reviewing the avenues in this district: for this reason no attempt has been made towards forming the long promised nursery at Gandi Khan Khel.

60. Four-and-a-half acres were added to nurseries in the Shahpur District, and in Hissar 30·76 acres were transferred to groves.

61. Fifteen thousand young trees of the Arabian date and 4,000 mangoes have been distributed from the nurseries in Ferozepore, which shows praiseworthy effort to introduce the cultivation of these species among the people.

62. Four acres have been added to the nurseries in Peshawar, where it is stated that nurseries are only kept up to supply ornamental trees to the various gardens not being required for road-side planting as the Tamarisk, which is the tree mainly used for avenues is always propagated by cuttings.

63. In Kohat the existing nurseries are said to be insufficient and their extension is promised. The opposite to this is the case in Karnal where the nurseries are in a flourishing condition and apparently ample for the wants of the district.

64. In Rohtak it has apparently been customary to transplant seedlings from the nurseries to road avenues when one year old, but in future only young plants of from 4—5 years of age are to be put out, which will necessarily add to the chance of success on the road-sides and is a step in the right direction.

65. In Jhelum some 5 acres were transferred to groves and 4,619 fruit trees and cuttings put out in the remaining nurseries: these have mostly been successful and are apparently intended for distribution among the people.

66. In Amritsar nurseries have been increased by 5 acres, and 3,055 shisham and fruit trees have been distributed from them to villagers.

67. The Tilauri Rakh (area 606 acres) has been struck off the area previously classed as nurseries in the Delhi District, and the Deputy Commissioner has also deducted 602 acres on account of previous years errors.

68. Four new nurseries aggregating close on 6 acres have been established in Rawalpindi.

69. From the Gurdaspur District it is reported that the existing nurseries are now stocked with trees fit for transplanting and a consequent considerable extension of the avenues is promised. Measures should however be taken to keep a certain portion of the area under nurseries permanently stocked with young trees of suitable ages for road-side planting.

70. As previously noted, all the nurseries in the Umballa District have been transferred to groves; and no effort appears to have been made towards the establishment of others.

71. Nurseries in the Sialkot District have been diminished by 14 acres, owing partly to the correction of previous returns and partly to the failure of wells due to inadequate rainfall. A very excellent system which is reported to be working satisfactorily is practised in this district; by the payment of annual subsidies, zemindars are encouraged to raise small nurseries round their wells; the advantages of these for road-side planting are obvious, and in addition it is expected that there will be by this means a saving in the cost of up-keep of District nurseries.

72. There are 8 nurseries in the Hazara District, and they are said to be in a very flourishing condition. A large number of trees have been distributed to zemindars and jagirdars from the nurseries at Haripur.

73. There has been a very large decrease in the nurseries in Kangra, which at the beginning of the year 1889-90 had amounted to 56·43 acres. During this year however 39·16 acres were transferred to plantations under the Municipal Committee of Dharmsala, and 11·75 acres to groves in Nurpur, against this diminution an addition of 1·81 acres was made so that the year closes with 6·36 acres stocked, not including 3·67 acres under the Municipality.

IV.—Government Gardens.

74. Again, it must be remarked that fuller information might well be given by District Officers under this head, for a good many reports contain no information concerning gardens except the prescribed financial *returns*.

75. We learn that in the Taleri gardens, the Church gardens and the Committee house gardens in Muzaffargarh, 977 fruit trees have been newly planted out, but rules for the distribution of plants among villagers have not yet been framed, because up to the present the plants are not suitable for distribution.

76. In Mooltan, 100 Egyptian date plants were raised in and distributed from the Langhe Khan gardens.

77. Large number of young plants were given away from the Government and Katchery gardens in Dera Ghazi Khan. In this district the garden at Khar is said to be flourishing, while that at Bugkushi failed.

78. One hundred grafted mangoes from Saharanpur and a large number of fruit trees of various kinds obtained from the Government gardens at Lahore were planted in the Station garden at Jhang, but it is to be regretted that the majority of them failed.

79. It is reported from the Peshawar District that about half of the Shahi Bagh garden had become an impenetrable jungle, and that this was cleared off during the year 1888-90, thus forming a grass park. Generally the garden in this district appear to be flourishing, and it is satisfactory to note that the zemindars require no encouragement in the cultivation of fruit trees.

80. The Deputy Commissioner of Kohat submits in his report some interesting information regarding the Municipal garden at that station; the garden has further improved, and the income derived from it is still steadily on the increase, and it is confidently anticipated that the expectations advanced in the last report will shortly be realized and the garden be more than self-supporting.

81. A number of mango and jaman plants were obtained from Lahore and planted in the Gujranwala station garden and on roads in the district; the jaman however entirely failed. The date palm was also tried in 1888-89, but in this instance also the results were not satisfactory.

82. The Municipality of Amritsar have formed two parks near the City on land reclaimed from the City ditch.

83. As nothing is said to the contrary in the report submitted by the Secretary to the Municipal Committee, Delhi, it is presumed that the Queen's the Roshanara, and the Kodsia gardens at that station are flourishing. The

large income realized from the Kodsia Bagh during the years 1888-89 and 1889-90 was abnormal, and consequent on a number of trees having to be cut down owing to the Delhi-Umbala-Kalka Railway passing through it.

84. The principal fruit tree in the Jullundur District is the mango, but it is reported that the people are not desirous of introducing fruit culture. There are, however, some old gardens in the district and a few more recent ones have been established by wealthy land-holders.

85. In Rawalpindi, the six public gardens continue to be successfully kept up; 2,546 fruit and other trees were planted in them, and 7,647 fruit trees distributed from them to zemindars and private individuals during the period under report.

86. Nurseries of fruit trees were opened in the gardens of Gurdaspur and the young plants distributed to zemindars at nominal rates.

87. The Umballa report states that the financial results of the station garden have been very poor and attributes this to want of water and to inadequate supervision; the future however augurs well.

With regard to the Umballa gardens and the orchards at Simla, I would invite reference to the extracts from the report of the Municipal Committee which is printed along with the District report, and I need only remark here that both, and especially the Umballa gardens, seem to be in a very flourishing condition.

88. From Kangra it is reported that a considerable number of English fruit trees were obtained from the Lahore gardens; some of these were planted out in the Katcheri gardens and some were distributed to European settlers in the valley; the former are said to be doing very well and are being used for propagation by means of cuttings, grafting and budding. In Kulu also a number of fruit trees were received from Mahasu and from Lahore, and were distributed to European settlers and native agriculturalists. Experiments are also being made towards the production, for distribution to zemindars, of the Spanish chesnut from seed supplied from the Forest garden at Manali, but at present no report as to success or otherwise can be given.

(*c*).—Cattle Trespass and Lopping.

89. Very little indeed has been said in the District reports upon the important subject of cattle trespass, and I would suggest that greater attention be paid to this in the future, for I am still of the opinion expressed in the last triennial report that the injury to young plants when first put out on the road-sides caused by the browsing of cattle passing along the roads, must be one of the greatest difficulties with which District Officers have to contend with.

90. This seems to have been realized by the Deputy Commissioner of Mooltan who attributes the large amount of failures in the avenues of the district more to insufficient protection and the consequent damage done by cattle and goats than to the want of a proper supply of water.

91. In the Amritsar District cattle found injuring road-side trees are impounded, and a fairly adequate system of fencing seems to have been adopted in the Gurdaspur and Sialkot Districts, though in the latter district it is, it appears that wilful damage to road-side trees by shepherds and villagers is constant, which has already been remarked on when reviewing the reports of avenues.

92. As regards lopping, the Rohtak report states that although the gardeners are provided with hands-saws, they still indiscriminately hack at the trees with hatchets, and in consequence it has been found necessary to prohibit lopping altogether except where absolutely necessary.

93. Although very little mention of lopping is made in the reports, it is obvious fron the financial statements that the practice is considerably resorted to in some districts; for instance, in Ferozepur there is an item of revenue amounting to Rs. 5,528 which is described as being due to the sale of loppings and old and dead trees during the past year.

I would take this opportunity of again recording my opinion that stricter supervision is still required in many districts in regard to lopping, which should not be conducted merely for the sake of making revenue.

(*d*).—Fodder Trees.

94. The information given in the reports on this subject is again very scanty; indeed the matter has only been mentioned in the reports of four or five districts. I have considered that the efforts made towards the establishment of the date palm do not, strictly speaking, come under this head, and have accordingly alluded to them elsewhere.

95. It is reported from Hissar that the introduction of fodder trees is very necessary, and that accordingly attention has been paid to planting kikar, pipal and other trees, the leaves of which are utilizable as fodder.

96. A scarcity of fodder trees has been felt in the Khwarra and Zira tappas of the Kohat District where both the people and their cattle are reported to have suffered considerably. The only fodder trees here (kao and ber) are of spontaneous growth, and beyond the efforts directed towards the extension and improvement of this growth nothing appears to have been done to relieve future distess.

97. The Hazara report states that no fodder trees are planted in the district, but that the leaves of the mulberry and the maple are used for feeding cattle. I may add that not only are the mulberry and maple used for this purpose, but that almost every species of leafy tree is subjected to ruinous lopping for fodder during the spring when grass is scare—the villagers even penetrating into the reserved and closed forests in search of such fodder which forms the main support of their cattle at such times.

(*e*).—Financial.

98. The following statement shows the income and expenditure of the period under report :—

Year.	Income.	Expenditure.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
1887-88	96,751	2,14,450	...	1,17,699
1888-89	1,33,243	2,37,960	...	1,04,717
1889-90	1,34,151	2,53,458	...	1,19,307
Total ...	3,64,145	7,05,868	...	3,41,723
Previous triennial period ...	1,92,874	4,36,519	...	2,43,645

From the above figures it will be seen that both income and expenditure have been steadily rising; this points to a greater amount of work done.

It is however to be noticed that the income of the period has amounted to Rs. 3,64,145 as against Rs. 1,92,874 of the last triennial period, thus having very nearly doubled itself. The total deficit amounts to Rs. 3,41,723 as against Rs. 2,43,645 of the last triennial period; the increase in the deficit must be ascribed to the greater expenditure that has been incurred owing to the increased activity that has been shown throughout the Province in the development of arboriculture. The largest increase in income has occurred in the Delhi District where it has risen from Rs. 3,870 in 1887-88 to Rs. 14,825 in 1889-90. This is mostly under the heads "Plantation and Miscellaneous." Under the former head due to the sale of dry trees and wood from, and to better supervision of the Bela plantation. The greatest expenditure has occurred on ornamental gardens, groves and avenues.

C.—DEVELOPMENT OF ARBORICULTURE BY PRIVATE PERSONS.

99. Generally speaking the interest taken by zemindars and land-holders in the development of arboriculture appears to be on the increase, and it is satisfactory to note that in the majority of the District, efforts are being made by means of the distribution of young trees of useful and ornamental species from gardens and nurseries to further interest the people in this object.

100. In Jhang there are a a few private gardens, and groves of date palm exist in some villages, but the want of rain is of course against any great advance in this district.

101. The Ferozepur report states that there are about 300 miles of avenues established by private persons along the banks of the Inundation Canals. The Nawab of Mamdot has also established some 60 acres of plantation on his own land.

102. In the vicinity of Kohat the people are in possession of a number of fruit gardens, in the extension and cultivation of which they are reported to be showing a lively interest.

103. In the Lahore report will be found a list of persons who have established orchards during the period under report.

104. The system of the granting of small rewards for private planting is being continued with success in the Gurgaon District, and during the period under report a sum of Rs 454 has been expended in this way and the report looks forward to more rapid progress owing to the awakening activity of the zemindar. No mention is made of the adoption of this scheme in other districts.

105. In those Tehsils of the Rawalpindi District in which water is obtainable, a very considerable amount of work has been done by village communities and private persons, no less than 40,984 trees having been planted out in the period under report. This, as the Deputy Commissioner remarks in his report, shows that the people are desirous of forwarding tree culture in this district.

106. A great deal of interest in both Arboriculture and Horticulture has been taken by private persons and village communities in the Sialkot District, for it is reported that gardens have been planted by private persons at almost every large village, and that small plantations may now be seen at almost every village in the district.

107. The Majlis Islamia, Abbottabad, and Maulvi Muhammad Ismail of Dhodial, have done good work in Hazara.

D.—CANAL ARBORICULTURE.

108. The detail of the operations carried on Canals will be found in the reports from the different divisions appended.

109. The following statement shows the results of the three years' work under avenues :—

Year.	3 Length of roads and canals suitable for avenues.	4 Length of roads and canals fully stocked with trees at beginning of year.	5 Length of roads and canals planted during the year.	6 Length of roads and canals which have failed during the year.	7 Length of roads and canals fully stocked with trees or plants alive at end of the year.
	Miles and decimals.	*Miles and decimals.*	*Miles and decimals.*	*Miles and decimals.*	*Miles and decimals.*
1887-88 ...	4,893·95	2,676·18	118 22	36·37	2,758·03
1888-89 ...	5,091·26	2,758·83	143 55	47 20	2,854·38
1889-90 ...	5,150·29	2,854·38	315·92	235·09	9,35·212
TOTAL ...	15,141·50	8,288·59	577.69	318·66	8,547·62

It will be observed that the net addition to Canal avenues has amounted to 259·03 miles.

110. The abstract below gives the progress in groves :—

Year.	3 Area of groves at the beginning of the year.	4 Area planted or transferred from nurseries during the year.	5 Area of failures during the year.	6 Area stocked with trees or plants alive at end of the year.
	Acres and decimals.	*Acres and decimals.*	*Acres and decimals.*	*Acres and decimals.*
1887-88	3,383·67	1,460·65	819·60	4,024·72
1888-89	4,024·72	164·25	160·00	4,028·97
1889-90	4,028·97	428 92	1,494·09	2,963·80
Total	11,437·36	2.053 82	2.473·69	11,017·4

This exhibits a decrease of 419·87 acres in the area under groves during the last three years ; as will be seen from the Divisional statements however this decrease is largely due to transfers to plantations. The progress in the latter may be seen from the figures below :—

Year.	3 Area taken up for plantation at the beginning of the year.	4 Area successfully stocked at beginning of year.	5 Area sown or planted during the year.	6 Area of failures during the year.	7 Area stocked at end of the year.
	Acres and decimals.	*Acres and decimals.*	*Acres and decimals.*	*Acres and decimals.*	*Acres and decimals.*
1887-88 ...	6,754·84	4,304·47	2,539·00	2,217 00	4,626·47
1888-89 ...	6,897·84	4,626·47	445·25	226·25	4,845·47
1889-90 ...	15,475·23	4,845·47	6,880 74	783 40	10,942·81
Total ...	29.127·91	13,776·41	9,864·99	3,226·65	20,414·75

which shows the very large increase of 6,638·34 acres ; this is mainly attributable to the inclusion of areas previously stocked but not until now entered in the forms and to transfers from groves.

111. The result of the work done on nurseries during the period under report may be seen from the abstract below :—

Year.	3 Area under nurseries at beginning of the year.	4 Area added during the year.	5 Area given up or transferred to groves during the year.	6 Area remaining at end of the year.
	Acres and decimals.	*Acres and decimals.*	*Acres and decimals.*	*Acres and decimals.*
1887-88	73·55	45·39	39·34	79·60
1888-89	79·60	37·65	27·24	90 01
1889-90	90·01	18 25	60·05	48·21
Total ...	243·16	101·29	126 63	217 82

From this it will be observed that the area under nurseries was slightly added to during the first two years of the period, but during the last year fell from 90 to 48 acres. This failure took place mainly in the Karnal and Delhi Divisions, Western Jumna Canal, and in the Ferozepur Division of the Sirhind Canal.

Financial.

112. The financial results of Canal arboriculture during the last three years will be seen from the table below :—

Year.	Income.	Expenditure.	Surplus.
	Rs.	Rs.	Rs.
1887-88	75,458	71,092	4,366
1888-89	83,449	73,221	10,228
1889-90	1,01,335	73,024	28,311
Total	2,60,242	2,17,337	42,905
Previous triennial period ...	2,15,459	1,55,415	60,044

During the period under report the surplus steadily rose, but nevertheless there is a decrease of Rs. 17,139 as compared with the results of the previous triennial period.

The expenditure has been fairly steady, while the income has risen owing to larger sales of timber and fuel from plantations, groves and avenues.

E.—ARBORICULTURE ON PROVINCIAL ROADS.

113. The statements printed at the end of the report will show that avenues on Provincial roads have been increased by a length of 217·78 miles during the triennial period: the chief additions have been made in the Peshawar, Lahore, Jullundur and Dera Ghazi Khan Divisions.

114. Groves have decreased by the large area of 1,473·33 acres. This is really not a failure of actually stocked area, but is due to the exclusion from the Rawalpindi Division of a very large area erroneously entered in previous forms.

The plantation statement contains a single entry of 155·97 acres brought on in Dera Ismail Khan Division in 1889-90. This had been omitted in previous returns, as a matter of fact the plantation dates from 1876.

115. Nurseries have during the period under report increased by 11·23 acres; the chief addition has taken place in the Kohat North-West Frontier Road Division, the remainder being generally spread over all divisions.

116. The following figures show the financial results of Provincial arboriculture since the year 1885-86. Prior to that no financial statements were submitted by Executive Engineers, Provincial Roads.

It will be observed that while both income and expenditure have been increasing year by year except in 1886-87, the deficit has risen from Rs. 6,691 in 1885-86 to Rs. 12,228 in 1889-90.

Year.	Income.	Expenditure.	Deficit.
	Rs.	Rs.	Rs.
1885-86	17,335	24,026	6,691
1886-87	15,956	19,133	3,177
1887-88	20,067	25,242	5,175
1888-89	22,035	26,695	4,660
1889-90	26,286	38,514	12,228
Total for 3 years...	68,388	90,451	22,063

During the triennial period under report, the deficit on Provincial arboriculture has been Rs. 22,063, and this is mainly due to the large increase in expenditure in 1889-90, chiefly under the head of "Extension of gardens and maintenance of groves and avenues."

I have the honor to be,
Sir,
Your most obedient servant,
A. E. WILD,
Offg. Conservator of Forest, Punjab.

DISTRICT ARBORICULTURE.

DELHI DIVISION.

Note by the Commissioner.

Rohtak.—Little can be done in Rohtak in respect of arboriculture. Tree-planting in the rakhs is specially hopeless; all the best land has been given away to grantees, and the lack of water forbids progress in cultivating what remains.

General Remarks on all Arboriculture Reports.—Arboriculture does not progress in this Division as it used to do in former days. Revenue officers now have less time for attending to avenues. Nor are avenues commercially profitable. I have done much in this way (see my printed Memo. as Deputy Commissioner of Ferozepur, dated March 1877). I found that roadside trees could not be raised under Rs. 2-8-0 each: whereas in groves they can be raised at an average of 4 annas.

But profitable arboriculture needs irrigation, and with irrigation any worthless piece of land can be profitably cultivated with trees. For roadside trees in districts of small rainfall, the kikar is the only profitable cultivation, but it is useless for shade.

On the whole I favor effort in development of rakhs,—birs, groves, fuel and fodder preserves generally, and consider avenues a waste of money and trouble.

DELHI DISTRICT.

Rainfall.—The rainfall was above the average in 1887-88 and 1888-89, but scanty in 1889-90.

Nurseries.—Excluding the Tilauri Rakh, the area under nurseries was ·85 acres in 1887-88. In 1888-89, an additional area of ·05 acre of the Delhi Najafgarh road nursery was sown but failed, and a new nursery was formed in ·28 acre in the Safdarjang tomb garden. In 1889-90, a piece of land was purchased for Rs. 22 for the extension of the Sunipat-Bahalgarh road nursery, and a pacca well was sunk on it at a cost of Rs. 220. Additional areas were sown in some of the other nurseries, and ·09 acres was transferred to groves, there being 2·24 acres under nurseries at the close of 1889-90. They are well-stocked with young trees. The number of trees issued from them is not clearly stated in the vernacular returns, but 816 young trees were transplanted from the nursery in the compound of Safdarjang's tomb. This is one of the best nurseries in the district.

Plantations.—The management of the Tilauri Rakh was transferred by Government to the District Board in the beginning of 1888-89. An income of Rs. 204 and 1,795 was derived in 1888-89 and 1889-90, respectively from sale of wood, bind, pula, jhao, grazing and cattle pound fees. A forester on Rs. 25 per mensem is employed. Kikar seeds were sown in blank portions of the rakh in about 160 acres during 1889-90, and the young trees not affected by the floods of the Jumna are thriving favourably. It is in contemplation to remove all the Cabuli kikar trees which are good for nothing, and to replace them by seed sown kikar and shisham trees.

The District Board have not been successful in their attempt to form plantations in the villages of Suredah, Dhindasa, Meola, Maharajpur, Ankhir and Fattehpur-Assaula: operations were commenced in the year 1884. Tanks were dug at the first four villages. Plots of land were given by the zemindars close to the tanks subject to certain conditions, and a plot of Government land was selected in Fattehpur-Assaula. Trenches were dug, seeds were sown, and a Chawkidar employed to look after the plantations, but owing either to bad soil, want of irrigation, or excessive rainfall, the young trees did not thrive. At Mehrauli a plot of land about 17 acres was fenced with a wall and trenches dug inside the wall, and kikar seeds were sown. The trees now are from 2 to 10 feet in height. Though the land selected was not good, yet in course of time this enclosure will be full with kikar trees.

Tree planting on irrigation bunds also comes under this head. Seeds were sown on the slopes of the bunds during the past three years and germinated, and the trees are thriving favourably. The Chawkidars employed for the watch and ward of the bunds look after the trees also.

Groves.—The area under groves was 30·54 acres in 1887-88. Owing to the failure of the plantations referred to in para. 3 above, it was reduced to 10·67 acres at the close of 1889-90. This amount includes the area of the three nurseries, the trees in which have become too high, and 10·56 acres on account of groups of trees round Police Stations, Posts, and Rest-houses.

The District Board maintain a staff of Malis and Bhishties for these operations at a cost of Rs. 24 per mensem. As there are full grown trees round most of these buildings, it would appear that the services of some of the men at least could be utilized in starting fresh operations elsewhere. A copy of the report of the District Superintendent of Police is annexed.

Avenues.—Nearly 75 per cent. of the Annual District Fund expenditure on arboriculture (*viz.*, Rs. 2,000) is devoted to tree-planting on the District metalled roads.

The following is an account of the progress made on them :—

Safdarjang-Humayun Tomb's Road.—The whole length 2·5 miles is fully stocked. The avenues are in a flourishing condition. The operations were confined to refilling gaps. One hundred and fifty trees were so planted in 1889-90. A Jemadar on Rs. 10 per mensem and a Bhishti on Rs. 7 per mensem are employed here. The Jemadar looks after the other roads also. The cost of establishment was Rs. 480 for the three years. The trees were pruned in 1889-90 at a cost of Rs. 17.

Delhi-Najafgarh Road.—Out of 12 miles, 4 were stocked with trees at the beginning of 1887-88. Three more were planted in this year. In the following two years, gaps were refilled. Earthen pitchers were placed under some of the young trees. Two Chawkidars at Rs. 5 each, 4 Bhishties at Rs. 7 each, 2 malis at Rs. 5 each and 1 mali at Rs. 6, are employed. The establishment charges for the three years amounted to Rs. 1,743. Five miles remain to be planted.

Sunipat-Bahalgarh Road.—Four out of 5¼ miles are well-stocked. The soil of the remaining portion is bad: 1,000 trees were planted in this portion in 1887-88, and seeds were sown in the two years following, but the operations were attended with indifferent success.

Sunipat-Murthal Road.—Two out of 3·8 miles were stocked with trees at the beginning of 1887-88. Gaps were refilled, and kikar seeds were sown in the remaining portion in 1889-90, but the seedlings died for want of rain.

The young trees on both these roads were protected from frost, and earthen pitchers were placed under them, 6 Bhisties at Rs. 7 each, 3 miles at Rs. 5 each, and 3 at Rs.4 each, and 1 Chaukidar at Rs. 5 are employed on both these roads. The cost of establishment of the three years was Rs. 2,016. The avenues are progressing favourably and growing into fine shady ones.

Badarpur-Mehrauli Road.—About 3, out of 8 miles were stocked at the beginning of 1887-88. Trees were planted in about a mile more in 1887-88, and again in another mile in 1889-90, 3 miles remain to be planted. The young trees were protected from frost, and earthen pitchers were placed under some of them. In portions of the 6th and 7th miles from Mehrauli, the avenues are very shady : 3 Bhishtis at Rs. 7 each, and 1 mali at Rs. 4 and 1 at Rs. 5 are employed. The establishment cost Rs. 1,000 for the three years.

Sowing seeds on unmetalled roads.—No seeds were sown in 1887-88 : seeds were sown in five miles in the Delhi Tahsil in each of the years 1888-89 and 1889-90, but the saplings are reported to have been eaten by cattle in one year, and to have died for want of rain in the other. In the Sunipat Tahsil, eight miles are reported to have been sown with kikar seeds successfully in 1888-89. Thirty miles were sown in 1889-90. The saplings are stated to be thriving in 16 of them.

No seeds are reported to have been sown on the roads in the Ballabgarh Tahsil, although Rs. 31 were advanced for this purpose in 1889-90. A change, however, in the Presidentship of the Local Board, Ballabgarh, occurred sometime ago.

The present President of the Local Board takes a great interest in tree-planting, and it is expected that the avenues of kikar trees on kacha roads in the Ballabgarh Tahsil, will make as good progress in future as is the case on the roads in the other tahsils.

Other roads.—Tree-planting along portions of the matalled roads which are in charge of the Department Public Works, are also making good progress.

Delhi Municipality.—A copy of the report of the Secretary, Municipal Committee, Delhi is annexed.

Sunipat Municipality.—There is a fine avenue of trees on the whole length of the Circular Road, *viz.*, 2·3 miles : gaps were refilled.

Tree-planting by Zemindars.—The following plots are reported to have been planted during the year 1888-89, under Mr. Maconachie's scheme :—

(1). Kikar trees in a plot of land,—6 pacca bighas in village Babarpur by Chawdhri Ram Baksh of Babarpur.

(2). Kikar trees in a plot of land,—5 pacca bighas in village Mitraon by Chawdhri Rugnath Singh of Mitraon.

(3). Kikar trees in a plot of land,—1 pacca bigha in village Nilauthi by Chawdhri Fatteh Singh of Nilauthi.

These plots will be inspected by the Secretary, District Board, in the next cold weather.

Three other plots of land have also been planted with fruit trees in the Ballabgarh Tahsil under general letter No. 63 A., dated 6th June 1887 of the Commissioner and Superintendent, Delhi Division.

Fruit trees.—Persian Gulf date seeds were received from the Director of Land Records and Agriculture, Punjab, in 1887, and distributed to private gentlemen and officials owning gardens. The reports received from them show that about the middle of 1889, nearly 400 plants were growing in various places, ranging from 3′ to 1′ in height.

Future plan of operations.—As the reports on arboriculture submitted by Local Boards are very meagre, not furnishing full details in each case, a monthly progress report has been called for from each Local Board, which will be filed in the office of the District Board, and which will furnish full data for preparing the annual statements and the triennial report in future.

As no portion of the supervising establishment on the metalled roads can be transferred for the present to any of the unmetalled roads for planting trees, it has been arranged that kikar seeds in about 50 miles of the kacha roads should be annually sown in different parts of the district, this being a cheap mode of raising trees.

Lopping.—This is done with handsaws by Malis in the cold weather.

Financial.—The financial results are as follows:—

	1887-88.	1888-89.	1889-90.
Expenditure.	Rs.	Rs.	Rs.
District Funds	3,533	2,696	2,623
Delhi Municipality ...	9,214	10,238	9,911
Sunipat Municipality ...	232	208	177
Total ...	12,979	13,152	12,711
Income.			
District Funds ...	2,526	591	463
Delhi Municipality ...	12,209	11,625	3,403
Sunipat Municipality ...	...	12	4
Total ...	14,825	12,228	3,870

The variations in the District Fund income and expenditure are due to the inclusion of the Tilauri rakh receipts and charges in the statements for 1889-90.

The income of the Bela plantation at Delhi was not included in the statement for 1887-88. The other variations are explained in the Municipal report.

Report by the District Superintendent of Police.—Trees at Police Stations, Road-posts and Rest-houses are classed under head "groves." The following statement shows number of old trees, and those planted during the past three years:—

Year.	Trees alive.	Planted.	Failed.	Balance.
1st April 1887 ...	5,749	...	...	...
1887-88	...	52	42	...
1888-89	...	132	516	...
1889-90	...	30	4	...
Total ...	5,749	214	562	5.401

At the end of the year, there were 5,401 trees on police lands; trees principally planted, are nim, siris, shisham and kikar.

Nurseries.—There are nurseries at Rai, Larsauli, Badarpur, Chaensa and Majhauli. The trees at Chaensa should be thinned out.

Establishment and supervision.—Three Malis and 5 Bhishties are employed to look after and water the trees at the various Police Stations and posts, and a supervision is exercised

over them by the officers in charge of Police Stations. Rupees 24 being the fixed monthly expenditure, with the following detail :—

			Rs.
2	Gardeners @ Rs. 5	... ...	... 10
1	„ „ „ 4	... ...	... 4
2	Bhishties „ „ 3	... ...	... 6
1	„ „ „ 2	... ...	... 2
2	„ „ „ 1	... ...	... 2
		Total	... 24

The following statement shows income and expenditure during the past years :—

Year.	Income.	Expenditure.
	Rs. A. P.	Rs. A. P.
1887-88	38 6 6	2780 0 0
1888-89	32 13 3	291 5 0
1889-90	12 12 3	284 12 5

Report by the Secretary, Municipal Committee, Delhi.—The three Municipal gardens (the Queen's, the Kudsia, and the Roshanara) may be classed under head "ornamental gardens," and the Municipal Bela plantation under head "plantation."

The income and expenditure of the three gardens and the Bela plantation for the three years ending 1889-90, is detailed below :—

Year.	Head of income and expenditure.	Income.	Expenditure.	Remarks.
		Rs. A. P.	Rs. A. P.	
1887-88	Queen's garden	1,294 11 5	4,519 10 1	
1888-89	„ „	1,535 0 0	3,530 12 7	
1889-90	„ „	1,330 2 6	3,546 1 2	
		Rs. A. P.	Rs. A. P.	
1887-88	Kudsia garden	914 5 6	2,288 2 0	
1888-89	„ „	1,556 1 6	2,048 9 3	
1889-90	„ „	1,321 7 9	1,710 7 3	
		Rs. A. P.	Rs A. P.	
1887-88	Roshanara garden	1,723 0 8	3,103 10 8	
1888-89	„	2,637 1 0	1,906 5 9	
1889-90	„ „	4,091 4 9	3,172 2 0	
		Rs. A. P.	Rs. A. P.	
1887-88	Bela plantation	2,847 14 6	785 3 5	
1888-89	„ „	6,162 11 9	578 14 7	
1889-90	„ „	5,556 2 2	789 5 8	

The very large income from the Roshanara garden during the years 1888-89 and 1889-90, is due to the sale of trees that had to be cut down owing to the Delhi-Ambala-Kalka Railway having passed through this garden.

The large increase in the income from the Bela plantation during the two years 1888-89, 1889-90, is due to the sale of dry trees and wood and to better supervision and reduction of establishment.

The income and expenditure under head "roadside trees" for the three years ending 1889-90, will be found in the following statement:—

Year.	Income.	Expenditure.
	Rs.	Rs.
1887-88	630	4,519
1888-89	595	3,530
1889-90	203	3,546

The decrease in the expenditure on roadside trees is due to the large reduction in the number of Malis and Bhishties employed on roadside trees during 1888-89.

No groves and avenues were planted during the three years quoted above, but a fence (about half mile round) of prickly pear was planted on the ridge to preserve some young trees which are springing up. When that fence is strong enough, some trees will also be planted within the area enclosed.

GURGAON DISTRICT.

Nurseries.—The first branch to be noticed is the work done in nursery cultivation.

It will be seen from Statement No. II that the nurseries have been fairly well utilized: the area under nurseries has diminished, a considerable part of the diminution being due to transplanting—a not inconsiderable area has also been given up or transferred to groves. Efforts will be made to increase the area under nurseries in places where roadside trees are needed.

Plantations in plain areas.—The results of plantation operations in plain areas have been on the whole disappointing. Statement No. III shows that the area stocked at the end of the year 1889-90, the account of the three years with which this report deals, amounted to 12·8 acres. To this area must, however, be added 67 acres of the Sohna plantation stocked with self-growing trees, as noticed below under the head of conserved Hill areas, and 26 acres stocked in the Inayatpur plantation. The latter is doing well and is as good a plantation as any in the District.

The largest failures in plantation operations occurred in Rewari Tahsil to which part of the District attempts to stock plantations have been almost entirely confined. Mr. Maconachie in a note left by him attributes the want of insufficiency of local supervision. This is undoubtedly one of the main causes of failure. Statement No. III however shows that the greatest decrease in the area under plantation took place in 1889-90, owing to a decrease in area sown and an increase in that which failed. The cause of these two circumstances may be found in the short rainfall of the year 1889-90. The success of plantation operation in the District is not very probable. Wherever good local superintendence can be obtained the matter wears a different aspect.

Groves.—Under the branch groves a large increase of the area stocked with trees is shown. A large part of this increase however is due to the inclusion of a considerable area coming under the definition of groves which had not been included before. Failures are conspicuous by their absence.

The groves shown as in existence at Jatusana and Dharuhera have not advanced very far yet and are groves only for the purposes of the definition. A few nurseries in which the trees have become too big for transplanting have been transferred to groves; this is the case on the Delhi-Muthra road.

The places requiring more special attention are the Rest-houses in the Rewari Tahsil and encamping-grounds.

Avenues.—The most important branch of arboriculture in the District is the planting of roadside trees or avenues.

The progress here has been satisfactory.

Work was completed in the Gurgaon Station road this year, and the gaps filled up. The Kutab Road is nearly complete. Two hundred and twenty-seven miles were planted this year, and gaps were filled up. A difficult piece of work still remains to be done here.

The Gurgaon Sohna road is now complete. A single line of trees 30 feet a part has been planted for 7 miles, kikars thinned where too close, and gaps filled up with one or two small exceptions.

On the Sohna Palwal road fairly good progress has been made,—8·9 miles out of 12·11 are fully stocked with trees.

The Palwal Hathin road is complete ; gaps were filled up this year.

Malis and Bhishtis will shortly be discharged from several of the above roads.

The Bahadargarh road has been completed this year by planting and sowing kikars, but the prospects in parts of it are not hopeful at present, and further sowings will be necessary.

The Gurgaon Farrukhnagar road has not progressed much ; it seems advisable not to plant the whole of the length shown as available.

The Rewari-Jhajjar road has made good progress, and 6·358 miles are now fully stocked with young trees. Credit is due to the Rewari Local Board for this.

On the Rewari-Narnaul road little or no progress has been made. The Rewari Tahsil is not one adopted for successful agricultural operations.

The road is an important one however, and planting and sowing will have to be carried on. One of the biggest pieces of work to be done in the District is the planting of the Nuh-Taoru-Rewari road : this will be a work of years. Operations have already commenced from both ends. The road from Nuh to Taoru is for the most part planted with young kikars which are coming on well, and a mile or so at the Rewari end has also been stocked.

On the Sohna-Firozpur road plantations have been successful so far as carried ; sowing in preference to planting will apparently be the best policy in the future The future success of our operations will be greatly hindered in places by the presence of *kallar* soil.

Conservancy of Hill areas.—The progress here has been very satisfactory ; the most advanced of these areas is that at Sohna, which has now thousands of young trees making in some parts a thick cover.

Bhundsi is slightly inferior to Sohna ; the areas at Nathupur, Khal and Tankri, though not to be classed with the above two, give much ground for encouragement in going on with the conservancy policy. These Hill areas have been entered in Statement No. III under plantations, but no planting or sowing is carried on ; the areas are merely protected from cattle grazing. This is a direction in which there is great scope for work in the District.

These Hill areas fulfil the purpose of grass preserves in years of scarcity like the present, and it is satisfactory to be able to note that the villagers continue to initiate conservancy of their own accord in several villages.

Income and expenditure.—Statement Nos. VI and VII give details of income and expenditure during the last three years as follows :—

	Income.	*Expenditure.*
	Rs.	Rs.
1887-88	2,897	8,434
1888-89	4,544	9,326
1889-90	3,741	9,052
	11,182	26,812

The above figures show that arboriculture is not a paying operation in this District at present ; the indirect benefits however are great.

The nearest approach to equilibrium between income and expenditure is in the case of groves and avenues; the demand for wood for charcoal or other purposes is small, but measures are being taken for storing felled trees and cutting carefully with a view of securing a better price for them by selling them at a time when there is a demand for them and not as soon as they are cut irrespective of the price obtainable.

Great efforts have been made to plant the date palm, and there are now several thousands of promising young trees in various parts of the District.

The Zamindars are being encouraged to plant trees of their own accord, small rewards are given for tree-planting at the Jalsa held in January at Rewari according to the following scale :—

	Rs.
1st grade for more than 500 *trees.*	5 to 8
2nd „ for „ 200 to 500 „	3 to 4
3rd „ for „ 50 to 200 „	2

The amounts expended in this way have been as follows :—

	Rs.
1887-88	318
1888-89	95
1889-90	41
	454

There is plenty of room for arboricultural operations still remaining in this District. What is to be done is distinctly worth doing, and the awakening activity of the Zamindar in this direction will doubtless aid in the next three years in bringing about a more rapid progress even than has taken place in the last three.

ROHTAK DISTRICT.

General Remarks.—Since the submission of the last report, there has been little to record. The rainfall of the three years under report as registered in the Sadr Station is as follows :—

1887-88	30·60
1888-89	21·00
1889-90	9·85

that of the last two years having been much below the average fall of this district.

There has been little or no success in arboricultural operations, especially during the past year when the winter rains also completely failed.

Description of work done.—Plantation operations have been carried out on roadsides in each tahsil under the superintendence of the Tahsildars who are *ex-officio* Presidents of the Local Boards. The accompanying statement will show in detail the number of trees planted out on the different roads in the district :—

Name of Road.	1887-88.			1888-89.			1889-90.		
	Planted.	Died.	Remaining.	Planted.	Died.	Remaining.	Planted	Died.	Remaining.
Jhajjar-Kharkhandah	668	15	653	165	33	132	...	4	...
Sampla-Beri	70	5	65	35	10	25	...	3	...
Bahadargarh-Jhajjar	500	14	486	210	16	194	90	17	73
Kharkhaudah-Rohtak	100	527	...	327	124	203	140	68	72
Dehli-Sirsa	1,196	4	1,192	67	51	16	480	135	345
Gohana-Rohtak	2,114	200	1,914	412	353	59	557	54	503
Rohtak-Jhajjar	...	120	...	271	177	94	200	55	145
Bahadurgarh-Beri	70	8	62	65	10	55	30	4	26
Beri-Jahazgarh	600	...	600	...	...	...	55	25	30
Bir-Sunarwala road	100	...	100	...	...	...	100	...	100
Customs road	50	...	50	...	...	...	...	...	...
Jhajjar-Jahazgarh	...	...	...	...	...	...	65	32	33
Do. Rewari	...	...	...	...	...	...	64	17	47
Jhajjar-Farrukhnagar	...	...	...	...	...	...	15	2	13
Gohana-Panipat	800	80	720	112	40	72	10	2	8
Do. Jhind	70	50	20	60	25	35	45	8	37
Road near Tahsil	...	...	...	20	5	15	25	5	20
Gohana-Hansi	450	200	250	290	112	178	65	12	53
Do. Tank	600	300	300	200	50	150	60	4	56
Do. Mehm	350	150	200	...	...	...	25	...	25
Do. Dehli	600	116	584	...	...	...	53	6	47
Rohtak-Bhiwani	1,262	...	1,262	125	143	...	225	50	175
Station roads	164	...	164	17	21	...	50	10	40
Circular road	83	...	83	37	41	...	55	20	35
Rohtak-Sundarpur road	...	61	...	11	...	11	...	...	...
Do. Singhpura	15	...	15	12	21	...	...	...	...
Rohtak-Beri...	339	...	339	8	65	...	35	10	25
Station water-course	179	...	179	...	...	...	...	...	..

and the following abstract will show the total number planted during the last three years and the number that died :—

	No. of trees planted.	*No. of trees died.*
1887-88 ...	10,380	1,850
1888-89 ...	2,444	1,297
1889-90 ...	2,444	543

Extension of planting operations.—There has been a marked decrease in planting operations during the last two years, as compared with the former year owing to failure of rains. Since the submission of the first report 1887, 17 miles have been planted out in roadside trees, details of which will be found in the abstract given below :—

Name of Road.	No of miles extended in		
	1887-88.	1888-89.	1889-90.
	Mile feet.	Mile feet.	Mile feet.
Rohtak-Panipat	2 4,120	...	...
Rohtak-Kharkhaudah	0 1,000	...	1 40
Jhajjar-Bahadargarh	1 2,830	...	...
Do. Kharkhaudah ... ..., ...	1 1,400	...	...
Sampla-Beri	0 600	...	...
Gohana-Dighal	2 1,640	...	...
Beri-Bahadargarh	0 700	...	...
Delhi-Sirsa	0 2.000	...	3 0
Beri-Jahazgarh	1 4,000	...	...
Water-course leading to Tahsil building, Gohana	1 2,640	...	...
Dadri-Jhajjar	...	...	0 400
Rewari-Jhajjar	...	...	0 1,320
Rohtak-Bhiwani	...	1 4,460	...

The trees used being principally shisham, nim, farash and occasionally siris. Siris trees are much grown in the tahsil nursery gardens, the gardners prefering them to any other on account of their rapid growth, and the show they make in nursery gardens, the trees are however little worth cultivating in this district, where they attain no size and suffer much from droughts. Directions have been given that they should discontinue sowing them in the nurseries, and that in future shisham, kikar and nim should be the trees used for avenues.

Work done by private persons.—The zemindars in this district are not keen on arboriculture. On some of the village, common lands (bani) the area under plantation has increased by spontaneous growth of kikar. No private land has been set aside for planting groves during the years under report. Several small fruit gardens have been started: a list of the owners, and the size of the gardens is noted below :—

Name of village.	Name of person who planted trees.	Area under plantation.			Species of trees.
		B.	B.	B.	
Bhadani	Gordhan Jat	0	16	0	Nim, shisham, jaman, pipal and pomegranate.
Badli	Wazir Singh and Mahtab Singh.	1	0	0	Lemon, amrud and pomegranate.
Do.	Bhagwan Singh	0	19	0	Amrud.
	Ganga Bishan	0	6	0	
Do.	Bahal Singh, Jit Singh and Kishan Lal.	2	11	0	Nim, anar, shisham, barber, amrud, tehswa, aru, lemon and kela.
Do	Sugan, Carpenter	1	0	0	Pipal, nim, shisham, kela, jaman, amba and tamarind.
Rohtak	Abdul Aziz	2	0	0	Beri, jaman and mulberry.
Do.	Radha Pershad	5	0	0	Beri and pomegranate.
Do.	Ganga Bishan	4	0	0	Ditto ditto.

Nurseries.—In this district each tahsil has a nursery garden, and there are two small ones in the Sadr Station ; the system at present adopted is anything but satisfactory, the young trees are planted out when about a year or two years old when they are hardly strong enough to withstand the rough treatment on the roadsides : even if they have strength to survive this, when their roots reach the kunkar stratum which is about four feet from the surface in this district, their growth is seriously impeded. It has been arranged that in future nursery gardens should only send out trees of four or five years growth, and that the holes to receive them shall not be less than 6 feet in depth which will be through the kunkar bed.

This was tried last year when planting young shisham and kikar trees near the treasury and Sub-Judges' Court, and found to answer remarkably well.

Lopping.—It is difficult to get tree-lopping done properly, and though provided with saws, the gardeners hack at the trees with hatchets without discretion ; they seem to think that the object of lopping trees is to realize a good sum by sale of the loppings and not to benefit the trees.

Income from loppings of trees.—For the last two years, the income under this head was not as large as in former years, owing to orders being issued that lopping should only be done where necessary.

Afforestation in reserved portions of Birs.—Afforestation has not progressed in the reserved portions of the Sunari and Chhuchakwas Birs. In 1887-88, several acres of the Sunari reserve were put under kikar which was sown in trenches, but only a small portion of the seed germinated, and the young trees died later on for want of rain. This year, should there be a sufficient rainfall, it is proposed to have several acres in each of the Birs ploughed and sown with kikar seed broad cast.

Expenditure.—The total cost of the establishment, &c., for the three years under report was Rs. 17,080, details of which are given below :—

1887-88	...	...	...	6,260
1888-89	...	...	...	5,546
1889-90	...	...	...	5,274=17,080

Income.—The income for the same period was Rs. 1,680 as shown by the following table :—

Year.	Ornamental garden.	Nurseries	Groves and avenues.	Miscellaneous.	Total.	Outlay.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1887-88	20	10	356	83	469	6,260	...	5,791
1888-89	...	18	607	43	668	5,546	...	4,878
1889-90	...	...	539	4	543	5,274	...	4,731

Cultivation of trees and their distribution among villagers.—Last February, 5 acres of land adjoining the public gardens were taken up for the purpose of being laid out as a nursery garden for fruit trees for distribution to zemindars of the District. Mangoes, sweet limes, bers, mulberries and jamans are being put down, and it is hoped that the next report will show a successful result.

Map.—A map showing the extent to which the roads in the District have been stocked with trees is herewith forwarded.

HISSAR DISTRICT.

THE detail of income realized during the three years under report has been given in the statement of Income No. VI. The decrease of Rs. 595 in the the year 1889-90 against preceding year is due partly to scarcity of rain and partly to a smaller sale of loppings, trees, &c.

The increase of about Rs. 800 shown in the statement of expenditure against preceding year has been incurred in the Sirsa Municipality :—

(1). On account purchase of a large quantity of fodder for bullocks that are kept for watering trees.

(2). On account cost of making buckets and ropes, and the expenditure on plantation of trees, &c. The decrease of Rs. 379 shown in 1888-89 against the preceding year, opposite to District Fund Expenditure, is due to the following works executed in 1888-89 :—

Trees planted on Bhiwani—

	Rs.
Rohtak road	60
Hansi Barwala road	50
Kheri Gangan	25
Custom's line at Hansi	50
Narnaund encamping-ground	7
Bhathi road	37
Tahsil Hissar	20
Reward paid to Gurmukh who planted a grove of trees at Odhan in the Sirsa Tahsil	25
Repairs to Park garden walls	44
Some petty works	61

The subjoined statement shows the area of trees added and planted during the year under report :—

Description of work.	1887-88.	1888-89.	1889-90.	REMARKS.
	Acres.	Acres.	Acres.	
Nurseries	...	...	0·50	At Hansi.
Plantation	...	...	21·37	„ „ Bir.
Groves	0·50	6·47	82·22	79·72 at Hansi Bir. 2·50 at Hissar.
Avenues	3·0	4·0	3·68	Station road at Hissar.

The total area stocked at beginning of the year 1889-90 is as follows :—

Description of work.	Area brought forward from 1888-89.	Area planted during 1889-90.	Area given up or transferred during 1889-90.	Arear remaining at end of the year.
	Acres.	Acres.	Acres.	Acres.
Nurseries	57·69	0·26	30·75	27·20
Plantation...	...	21·37	...	21·37
Groves	60·32 miles	82·22 miles	...	142·54 miles
Avenues	104·58	3·68	...	108·26

Nurseries.—The area under "Nurseries" at the beginning of the year, and also of the two last years, stands at 57·69, 0·26 (omitted erroneously from the last year's statement) have been added, thus making a total 57·95 of which 30·75 being transferred to "Groves," leaves at the end of year a balance of 27·20 only.

Plantations.—The area 21·37 shown in column 5 of the statement has been planted at Hansi Bir with a view of producing a timber crop and is irrigated with canal water.

Groves.—The last year's total of area under this head comes to 60·32 to which 82·22 has been added as follows :—

Received by transfer—

From nurseries	30·75
Planted during 1889-90	51·47

A sufficient establishment is entertained for the maintenance of these groves.

Avenues.—The total length of roads stocked with trees at the beginning of the year was 108·26 miles; but in the last year's statement 104·58 was entered erroneously which has been corrected, *vide* instructions contained in paragraph 5 (1) of Part IV of the Manual of Arboriculture.

In my opinion it is a waste of money to attempt the formation of avenues in this district, except at the Head-quarters or at tahsils, as at other places there can be little or no supervision and the trees are planted out only to die.

General Remarks.—The instructions received from the Conesrvator of Forests under cover of Commissioner's Circular No. 42, dated 6th February 1886, have been carefully attended in this district, and particular attention has been paid in planting such trees—the leaves of which can be utilized as fodder for cattle, which is greatly needed in a dry district like this : the trees planted are kikar, pipal, shisham, lisora and shahtut, &c.

The inadequate rainfall made the seasons generally unfavorable for arboriculture during the years under report.

KARNAL DISTRICT.

Statement No. 1—Rainfall.—The average rainfall during the first two years 1887-88 and 1888-89 was considerably above, and during the following year 1889-90, much below the average of the past years ; but though the insufficiency of the monsoons of this year does not appear to have affected the operations in arboriculture to any very material degree, the entire failure of the winter rains was a source of increased expenditure in keeping alive the young stock planted out during the monsoons.

Nurseries.—No new nurseries were formed in this district during the period under review, nor were any existing ones abandoned. The three existing ones, one at the Head-quarters of each tahsil having been duly maintained.

There were at the beginning of the year 1887-88, 4,659 plants including seedlings and big trees in the three nurseries ; to these 17,691 seedlings were added during the last three years, thus making a total of 22,350 in all.

Of these 2,774 died during the period under report, and 2,600 were planted out on the different roads as follows :—

1888-89	600 plants.
1889-90	2,000 „

thus leaving a stock available for future use in the nurseries of 16,976 plants, mostly of one and two years' growth at the close of the year under report.

These are all in good and thriving condition, the irrigation being effected from wells in all the three nurseries.

The nursery at Karnal contains also 200 fruit and 100 flower trees, which yield on an average an annual income of Rs. 125.

The varieties of trees in the nurseries consist chiefly of shisham, siris, jaman, mulberry, bakayan, pipal, gular, &c.

It may also be worthy of note that during the rains of 1887 a small quantity of *Suga samun* (rain-tree) seed was supplied to this District by the Director of Land Records and Agriculture, Punjab, for experimental sowing; these were accordingly in strict conformity with the directions received, sown in the nursery at Karnal, and the result was about 20 young plants out of about 85 seeds sown. Of these, there are now 14 two years' old healthy young plants thriving in different parts of the station.

The failure appears to be evidently due to bad seed which might have been too old or damaged.

Plantations.—There are no plantations in this District.

Groves.—There are altogether 13 groves in this District, which contain 1,918 trees. The increase of one grove as compared with the previous report is due to the inclusion in 1888-89 of the Nisang Rest-house which was by an oversight omitted from previous returns.

With the exception of the trees in the Nisang and Pundri Rest-house compounds which are young and still require tending, the rest are all full-grown trees, and need no further care as regards maintenance.

During the period under review, only 15 trees died; 27 trees were planted out in the Pundri Rest-house to fill up large gaps.

The groves are situated as follows:—

KARNAL TAHSIL.

Karnal	4	containing	750 trees.
Gharounda	2	„	108 „
Butana	2	„	375 „
Nisang	1	„	240 „

PANIPAT TAHSIL.

Panipat	1	containing	22 trees.
Samalka	1	„	121 „

KAITHAL TAHSIL.

Kaithal	1	containing	52 trees.
Pandri Rest-house	1	„	250 „

The groves at Karnal, Gharounda, Butana, Panipat and Samalka are all along the Grand Trunk Road and present good shady spots, a desideratum to the camping grounds on which they are situated.

Avenues.—The energies of the arboriculture establishment have been devoted principally to the maintenance and preservation of existing trees on the roadsides, but during the past year, operations in the tree-planting line were extended on two principal roads, namely, Karnal-Kaithal and Panipat-Salwan roads.

The former is an important line of communication, much used by travellers and chiefly traders trafficing in grain, and as its importance is likely to be enhanced by the opening of the Delhi-Kalka Railway at Karnal, to which this is intended to be as a feeder road, it is the more desirable that this line should be fully stocked and afford good shade, and with this view about 8 miles of this road was fully planted out with 1,700 young plants during the last rains, 7 miles being planted in previous years.

Tree-planting operations on this line have always been attended with some difficulty and expense owing to the scarcity of water and the distance from which it has to be obtained; and the number of trees (*viz.*, 1,000) which have died out on this road in the last three years out of the 3,198 which existed on this line at the beginning of 1887-88 does not under the circumstances appear to be extraordinary.

The results of the recent operations appear satisfactory, and the plants are all so far doing well, though at the cost of heavy expense.

Again two miles of the Panipat and Salwan road was also planted out with 300 young plants, at the same time beside the 600 plants which were put in place of those that died on the different roads are as follows:—

Karnal-Kaithal	40
Do. Ferozepur	34
Rajaund-Assand	97
Kaithal-Pehawa	50
Kaithal-Jhind	200
Station roads	114
Panipat-Kothi road	60
Grand Trunk road	5

There are altogether 23 roads on which avenues consisting of single lines of trees exist, as will be seen from the accompanying map on which these are fully illustrated. These comprise an aggregate length of 67·8 miles which are stocked with 24,829 trees.

The memo. subjoined shows the result of arboricultural operations during the last three years :—

Years.	Trees remaining at the beginning of	Trees planted during the year.	Trees died.	Remaining at the close of	Remarks.
1887-88	22,692	584	1,250	22,026	
1888-89	22,026	3,412	2,487	22,951	
1889-90	22,951	2,600	722	24,829	

During the monsoons of 1887-88 which were very favourable advantage was also taken of encouraging kikar seed sowing on waste plots and other localities, and with this view Rs. 123 was distributed to the members of the District Board to enable them to have the seeds collected and sown in various localities ; but it is much to be regretted that the result proved unsuccessful, as owing to the heavy monsoons it was reported that almost all the seed put in was destroyed.

Financial Results.

The following table exhibits the income and expenditure for the last three years :—

Particulars.	During			Total.	Surplus.	Deficit.
	1887-88.	1888-89.	1889-90.			
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Income.						
Sale of wood	64	195	877			
„ of fruit and vegetables	23	211	400			
„ of grass	...	40	31			
Loppings of trees	...	9	...			
Miscellaneous	...	...	17			
Total ...	87	455	1,325	1,867		
Expenditure.						
Nurseries—Establishment	328	764	358			
„ cost of bullocks, &c.	...	113	518			
Repairs to wells, huts, &c.	265	...	11			
Avenues.—Supervising establishment ...	...	135	878			
„ Watering ditto ...	1,388	1,852	2,955			
„ Protecting ditto ...	240	240	300			
Tools and plant	...	...	70			
Miscellaneous	...	...	154			
Total ...	2,221	3,104	5,245	10,570	...	8,703

The increased income during 1889-90 on account of sale of wood, is due to compensation realized, *viz.*, Rs. 694 from the Railway Department for trees cut down which came in the line of the Dehli-Kalka Railway.

The large expenditure noticeable during the years 1888-89 and 1889-90, is owing to (1) failure of winter rains on account of which extra establishment had to be maintained, and (2) the duty of supervising and looking after roadside avenues which was formerly done through the Revenue Agency, having now entirely devolved on the District Board, for which reason two patrols at a cost of Rs. 780 per annum have to be maintained.

In conclusion I would briefly add that in accordance with the instructions promulgated by the Government of India, on the subject of introducing the culture of the date palm into districts for food supply, a supply of a maund of Persian Gulf seed of the following varieties * was obtained.

* Persian Gulf, El-amri, Gandina, El-khadramy, Zalonti, Samani.

These were distributed in September last free of charge for cultivation to the principal residents owning gardens and landed property in the District, who evinced an interest in the cultivation of the date palm.

No reports as to results have yet come to hand, and it is therefore impossible to report here.

A few offsets of Egyptian variety were also indented for, but these have not been received.

AMBALA DISTRICT.

Rainfall Return.—The entries in this return relate to Sadr Stations only, *vide* foot note (*a*).

Progress Statement of Nurseries.—This statement is blank, as there were no nurseries during the last three years. But the Tahsildars have lately been directed to establish nurseries in their respective tahsils.

Statement of Plantation.—This statement is blank.

Statement of Groves.—At the beginning of 1887-88 there were no groves; but during this year 3·81 acres of land were planted, of which ·75 acres failed. During 1888-89, 3·09 acres of land were planted and 2 acres failed. Out of 2·12 acres of land planted during the last year, ·77 acres failed; area stocked with trees at the end of 1889-90 was 5·50 acres.

Statement of Avenues.—There has been no change in the length of roads during the last three years. At the beginning of the year 1887-88, length of single lines stocked with trees or established plants was 244·95 miles, and at the end of 1889-90 it was 267·24 miles, or a difference of 22·29 miles, which is due to the progress made during the last three years on different roads. Number of trees at the beginning of 1887-88 was 79,419, 21,162 trees were planted during the last three years, and 21,782 died or were cut down. There were 78,799 trees at the end of 1889-90 or a deficiency of 620 trees which is due to realignment of a part of the Ambala Nahan road.

Income Statement.—The income under the different minor heads during the last three years was as follows:—

Year.	*Ornamental gardens.*	*Nurseries.*	*Avenues.*	*Total.*
	Rs.	Rs.	Rs.	Rs.
1887-88 ...	187	...	2,616	2,803
1888-89 ...	205	...	4,292	4,497
1889-90 ...	254	...	3,679	3,933
Total ...	646	...	10,587	11,233

Statement of Expenditure.—The expenditure on arboriculture during the last three years was Rs. 13,862 as detailed below:—

Year.	*Ornamental gardens.*	*Nurseries.*	*Avenues.*	*Total.*
	Rs.	Rs.	Rs.	Rs.
1887-88 ...	1,412	...	2,636	4,048
1888-89 ...	1,476	...	3,284	4,760
1889-90 ...	1,651	...	3,403	5,054
Total ..	4,539	...	9,323	13,862

The financial results of the station garden are very poor, this is due—

(1) to the want of sufficient water for irrigating purposes. This was at the end of the year taken in hand by the construction of another well: it is intended to put in a pump and pump up the water;

(2) the garden hitherto has not been properly supervised. The Secretary has now been placed in entire charge and has taken up the matter, and better results are expected next year.

The income and expenditure under head "avenues" are about equal.

There has been no peculiar event during the period under report affecting arboriculture.

A district map is being prepared and will be sent shortly: but it is to be regretted that young and old plants cannot be distinguished this year.

SIMLA DISTRICT.

Two sets of forms are submitted—one relating to operations of the Simla Municipal Committee and the other to the remainder of the District. Of the latter, Nos. III, IV and V are blank. Only one form of Return I is submitted, as from the footnote it appears that the rainfall of the Sadr Station only is required.

The Municipal Committee has done something to planting up the bare places about the station. Young deodars, horse chestnuts and Robinia are flourishing in small places Much has also been done in the way of fruit-tree culture, regarding which a separate report has been made.

In Kalka a nursery has been started (last year), and arrangements are being made to plant up the parade ground with mango tree, as was done in Hoshiarpur District in 1877-80.

There is after all not much arboriculture done in this District, in the manner in which it is done in the plains. There is neither the opportunity nor the necessity for it. There is only one avenue (at Kalka) some ½ mile long. The trees are full grown. No map of the nature described in the Circular, is therefore required.

Extract from the Annual Report of the Simla Municipality, 1888-89.

Annandale Garden.—The Superintendent, Annandale Garden, submits the following brief reports on :—

1 Annandale garden ;
2 The orchards, and
4 Station tree-planting for the year 1888-89.

There has been a considerable improvement in the sale of all garden produce, the result of money and labour expended in previous years, and for the first time for several seasons the income was greater than the expenditure.

	Rs.	A.	P.
In comparison with the receipts for the previous year, I am pleased to report the substantial increase of	4,007	5	0
During the year 1887-88 the amount actually realized was ...	4,025	0	0
For year under review the sum collected was	8,030	5	0

The produce actually sold during the past year was—

	Rs.	A.	P.
Plants	3,204	15	3
Bouquets and flowers	2,989	3	0
Apples	1,446	7	0
Small fruits	542	5	6
Seeds	83	3	9
Sundry items	328	14	0
Total ...	8,595	0	6

Of this a sum of Rs. 925-15-6 was outstanding on the 1st April last, but Rs. 134-11-0 has been paid since that date, and Rs. 169-12-0 is being recovered through the Small Cause Court, which reduces the amount to Rs. 620-8-6.

Compared with the previous year the sales have increased under every heading as shown below :—

	Rs.	A.	P.
Plants by	1,130	13	9
Bouquets and flowers	1,481	15	0
Apples	1,017	14	0
Small fruits	446	0	6
Seed and miscellaneous items	209	2	9
Total Increase ...	4,285	14	0

The fruit season of 1888 was the best we have had since 1883, and but for the fact of a good many fruit trees having been removed in 1884 for the extension of the race course, the crop would have realized more, although the prices were lower in 1888 than in 1883.

The quantity of produce sold naturally prevents the garden being so attractive for the general public as it would be were it kept up for ornamental purposes only. I do not, however, think it desirable to alter the policy of endeavouring to make as much as possible out of the property.

The expenditure for the year was—

	Rs.	A.	P.
Share of Superintendent's pay	1,800	0	0
Native establishment	1,945	13	7
Contingencies inculding purchase of plants and bulbs ...	1,550	10	5
New hot water boiler	344	6	0
Total ...	5,640	14	0

The net result for the year is, therefore—

	Rs.	A.	P.
Total sum collected	8,030	5	0
„ expenditure	5,640	14	0
Profit ...	2,389	7	0

Station tree-planting.—The grant for this purpose was the same as last year, *viz.*, Rs. 500, and the amount actually spent was Rs. 514-14-6.

The trees and shrubs noted below were planted about the station during the year, 1888-89 :—

Cupressus torulosa	448
„ majestica	13
Populus ciliata	720
Quercus dilatata	240
Robinia Psendo-acacia	62
Melia Azedarach	40
Willows	97
Wild cherries	6,595
Gorse	177
Broom, white	225
„ yellow	145
Total ...	8,762

Seed sown *in situ* :—

Horse chestnuts	155 seers.
Walnuts	16 „
Oak (Quercus incana)	128 „
Total ...	299 „

The trees which are more or less protected are doing well, but as I have previously pointed out those which are planted on unenclosed plots, suffer from many causes, and unless steps are taken to protect the trees, it seems hopeless to expect much success to attend one's efforts.

The tree which is being most successfully cultivated is Robinia-psendo-acacia, which adapts itself readily to any soil and position, and I hope to receive from Government during the current season, a considerable quantity of seed of this tree for cultivation in Simla.

The Blue gum tree, Eucalyptus-globulus, suffers so much from the snow that it is not desirable to continue its cultivation.

The nursery stock now consists of 5,400 trees in pots, and about 22,000 in the open ground, a large number of which will be planted out during the ensuing rainy season.

Orchards.—No change has taken place in the general management which need be recorded, and the former statements as to the distribution of the trees may be maintained.

The fruit trees are making satisfactory progress, and the yield is certain to increase every year.

During the past year the produce sold was as follows :—

	Rs.	A.	P.	Rs.	A.	P.
Fruit—						
Peaches	110	9	0			
Apricots	95	0	0			
Apples	12	14	0			
				218	7	0
Fruit trees				202	2	0
Lucerne				368	7	0
Potatoes				97	2	0
Rhubarb				44	3	0
Vegetables				44	14	0
Miscellaneous items				3	12	0
Total ...				978	15	0

Of this sum Rs. 885-0-0 was realized, leaving a balance outstanding on the 1st April last of Rs. 93-15-0. This has since been reduced to Rs. 55-6-0.

The total income for the year was—

	Rs.	A.	P.
Government grant	2,250	0	0
Produce	885	0	0
Total ...	3,135	0	0

The expenditure for the year was—

	Rs.	A.	P.
Share of Superintendent's pay	1,800	0	0
Native Establishment	1,720	5	9
Contingencies	500	6	1
Total ...	4,020	11	10

The financial state of the orchards is now as follows :—

	Rs.	A.	P.
Expenditure from commencement to 1st March 1888, as given in last year's report	20,099	10	11
Expenditure, 1888-89	4,020	11	10
Total ...	24,120	6	9
Total receipts from commencement to 31st March 1888 ...	10,181	12	0
Produce, 1888-89	885	0	0
Government grant, 1888-89	2,250	0	0
Total ...	13,316	12	0
Leaving the net cost to the Municipality to 31st March last of...	10,803	10	9

The trees distributed and sold were—

	Rs.
Distributed through Deputy Commissioner	243
Sold	234
Exchanged	56
Total ...	533

The following are the names of the chiefs, zemindars and others to whom trees were given :—

Rana of Jubal	20 trees.
„ of Bhajji	15 „
Tika of Theog	10 „
Mr. Minniken	30 „
Pundit Teaka Ram	11 „
Shaib Singh	10 „
Rana of Dhami	20 „
Sir E. Buck for Khyar	30 „
Pir Bakhsh	4 „
Rana of Kothar	15 „
Tahsildar of Kotegarh	30 „
Sodamah	8 „
Gudru Mall	40 „
Total ...	243 „

The stock of young trees likely to be available for sale and distribution next winter is—

Apples	508
Cherries	542
Peaches	24
Apricots	35
Pears	255
Plums	108
Total ...	1,472

In addition there are 386 apple grafts at Annandale, but they are more or less affected with a disease called "American Blight," and it is undesirable that these should be sent out into the District.

The propagation of apples will, in consequence, have to be discontinued at Annandale.

The following stocks are available for future grafting :—

Apples	2,620
Pear	520
Cherry	340
Almonds	650
Alubokhara	106
Total ...	4,236

JULLUNDUR DIVISION.

Note by Commissioner.

The Deputy Commissioner of Hoshiarpur has, I regret to say, supplied figures for the last year 1889-90 only in the Returns submitted by him, but with the help of the provincial printed statements for the years 1887-88 and 1888-89, I trust, for the purposes of this report, to be able to make good the deficiency without having to refer back to the District Office. The report too of this district is exceedingly meagre, and the same may be said of the report sent up by the Deputy Commissioner of Ferozepur.

Rainfall.—The rainfall during the year 1889-90 was as follows:—

Ferozepur	16·91
Jullundur	17·75
Ludhiana	21·57
Hoshiarpur	30·57

These figures are taken from Return No. I of the accompanying Returns, but looking at the figures for past years as given in the Jullundur and Ludhiana District Returns, none having been furnished in those of Ferozepur and Hoshiarpur, and comparing these with the figures shown in the printed statements for 1887-88 and 1888-89, the following wide differences are observed, and for this no explanation at all has been offered:—

	Rainfall.			
	As shown in the district statements accompanying.		*As shown in the printed statements.*	
	1887-88.	1888-89.	1887-88.	1888-89.
Jullundur	26·9	25·4	21·5	6·1
Ludhiana	29·20	26·55	25·46	5·7

It would certainly seem that the rainfall has been incorrectly recorded in the printed statement for the year 1888-89, as turning to the figures for other Districts, I notice that in every instance the fall is shown to be greatly below the *average.*

Average rainfall of past years.—The average rainfall exhibited in the District Returns, which accompany is—

Ferozepur	22·31
Jullundur	28·25
Ludhiana	28·10
Hoshiarpur	35·04

How these averages have been obtained is not clear, except in the case of Jullundur and Ludhiana, as in the report for the former District, it is stated that it is "the average fall of the past 23 years," as taken from the *Punjab Gazette*, and "a statement received from the Director of Land Records in May 1887"; while the figures for Ludhiana given above comprise the average fall of the three years preceding the year 1889-90, according to the Agricultural Prospect Reports from 1st April 1887 to 31st March 1890. The average fall of past years as therein shown in each of the four Districts under notice, is as below:—

Ferozepur	18·87
Jullundur	27·58
Ludhiana	26·89
Hoshiarpur	36·48

Remarks as to effect of rainfall.—On the subject as to the effects of rainfall in relation to arboriculture, nothing has been said, except in the report of the Jullundur District where the fall in 1889-90 was conspicuously below the average, or that of the two years preceding. The water in the wells is reported in consequence to have gone down to the lowest level, and the tanks to have run dry. A larger watering establishment had therefore to be entertained and kept on for a longer period than usual.

The rainfall in 1889-90 was in all four Districts now reported on, considerably below the average, but it does not appear to have affected operations in arboriculture to any material degree.

Nurseries.—The area under nurseries in the several Districts is noted below :—

	At the beginning of 1887-88.	At the close of 1889-90.
Ferozepur	7 acres.	5·25
Jullundur	16·69	15·10
Ludhiana	5·38	4·31
Hoshiarpur	2·77	2·77

In Hoshiarpur no change has taken place since the last report was submitted in 1887, while of the area added or transferred in the other three Districts above-mentioned, details are supplied in Statement No. II.

In Ferozepur the nurseries so well stocked when Mr. O'Brien held charge of the District, do not appear to have been replenished in proportion to the plants removed for supplying the requirements for roadside avenues and free grants to cultivators, who were given some 15,000 plants of the Arabian date palm and about 4,000 young mango trees.

It is shown, however, that the want of nurseries is not so much felt in this District, as roadside wants are not generally supplied by transplanting from nurseries. The plants being put down direct in narrow ditches alongside the road, which are supplied with water from the Inundation Canals.

In the Jullundur District in addition to providing for roadside requirements, 17,320 trees have been supplied from the nurseries within the last three years to zamindars and to the Executive Engineer, Provincial Division, and the Cantonment Magistrate. There are six nurseries in the Ludhiana District in which it is stated "saplings of shisham, jaman, pomegranate, lime, siras and orange trees are reared." The zamindars are reported not to take much interest in tree-planting, and it would seem that the nurseries are somewhat neglected by the District Board.

Plantations.—There are no plantations under the District Board in the Ferozepur, Ludhiana and Hoshiarpur Districts. In first of these, a plantation known as "Kheruwala" is maintained from Provincial Funds, and the only mention of this in the District Report is that "altogether about 423 acres of land was taken up, of which 55 acres have hitherto been successfully planted by means of a canal cut" taken from Mobarakwah Inundation Canal.

The Municipal Committee of Fazilka have "about 30 acres of good plantation, mostly kikar near the town of Fazilka, which (plantation) is irrigated by the Mobarakwah Inundation Canal in that Tahsil."

In the Jullundur District the total area taken up for plantations stood at 231 acres at the close of 1889-90, or 23 acres below the area shown as taken up for the plantations at the end of 1886-87, when there were 22 plantations in the District, all on the banks of the Sutlej. Three of these (covering 23 acres) have since been washed away by the action of the river. Statement No. III shows the area sown since the last report was submitted in 1887 and also the "area of failures."

The sowings appear to have all failed with the exception of those on one acre in the Nakodar Tahsil.

Groves.—The area under groves is noted below :—

	Area of groves at the beginning of 1887-88.	Area of groves at the end of 1889-90.
	Acres.	Acres.
Ferozepur	437·63	458·54
Jullundur	...	4·79
Ludhiana	149·00	352·59
Hoshiarpur	3·23	15·23

In Statement No. IV, the details of area planted and of failures are supplied. Nothing is said in the report sent up by the Deputy Commissioner of Ferozepur as to the planting of 155 acres during the past three years, *i. e.*, 38 acres in 1887-88, 159 in 188-898,

and 4 in 1889-90; nor any explanation afforded of the failure of 134·40 acres in 1887-88 Indeed the figures exhibited in the statements are not in any case discussed in the report.

The Deputy Commissioner of Jullundur states that the figures under the head "groves" represent the area of these nurseries in which the trees have become too old for transplanting. The figures entered in former years in the statement for groves being shown in the additional statement now prescribed for plantations.

Similarly in Ludhiana the plantation in which trees have grown up and are no longer fit for transplanting, has been entered under the head "groves." The increase in area being due to the transfer of 206 acres of rakh land to this head.

The 12 acres shown as having been planted in Hoshiarpur during the year 1889-90 are part of a plot of 15 acres purchased by the District Board some time back for a Town Hall. These 12 acres have been laid out as a garden and stocked with fruit trees of which details are given in the District Report.

Avenues.—According to Statement No. V, the following table purports to show the length of roads suitable for avenues or along which avenues exist:—

	Year.	Length of roads (in miles and decimals).				
		Suitable for avenues.	Stocked with trees at the beginning of this year.	Planted during the year.	On which planting has failed during the year.	Stocked with trees or plants alive at the end of the year.
Ferozepur	1887-88	731·75	470·40	4·00	257·35	217·05
	1888-89		217·05	268·35	...	485·40
	1889-90		485·40	4·00	...	489·40
Jullundur	1887-88	258·03	208·29	9·00	0·25	217·04
	1888-89	270·03	217·04	2·08	...	219·12
	1889-90	276·52	219·12	15·65	21·12	213·65
Ludhiana	1887-88	149·75	105·31	4·11	9·17	100·25
	1888-89		100·25	28·50	...	128·75
	1889-90		128·75	3·00	...	131·75
Hoshiarpur ...	1887-88	440·05	353·38	...	...	353·38
	1888-89	447·62	353·38	4·78	...	358·16
	1889-90	447·62	358·16	53·00	...	411·16

I regret to find that but scant attention has been paid in the District offices to these instructions for the preparation of these Returns.

The figures above given (except in the case of the Jullundur District) represent in miles and decimals, the lengths of single lines of trees or established plants, and not length of roads as required by the recent instructions, and it would seem that the statements have been filled in without any regard being paid to the headings of the columns or to the foot notes.

Remarks as to planting, &c., done within the three years under report—(*a*) *Ferozepur.*—The Ferozepur District Report shows that there are about 350 miles of successfully grown trees on the banks of the Inundation Canals which belong to the owners of the land through which the said canals pass. These trees are not shown in the statement. The Nawab of Mamdot is stated to have planted over 60 acres of land with trees near his canals. These trees are included within the 350 miles above-mentioned, which represents the total length for the whole district of district canal side-plantation.

In the statement for this District (No. V), it is shown that the "length of roads and canals planted during the year" was 4 miles in 1887·88, 268·35 miles in 1888-89, and 4 miles in 1889-90, and that planting on 257·35 miles failed in 1887-88. The report does not deal with these figures at all, and it is hard to say what they really represent, since I find that the 485·40 miles entered in column 3 as "length of *roads and canal* fully stocked with trees at the beginning of year" 1889-90, corresponds exactly with the "length of *single lines stocked with trees or established plants* at the end of the year" as shown in column V of the printed Statement No. I (*a*) for 1888-89.

The report merely shows so far as roadside-planting is concerned; that "about 17 miles of new trees have been successfully planted during the past three years." "Most of these trees, it is added, owe their successful growth and the present promising

condition to the canal water partly taken from the Sirhind Canal, and chiefly from the Inundation Canals of the District by means of digging $1\frac{1}{2}' \times 1\frac{1}{2}'$ ditches alongside of the roads where new trees have been planted and sown". The shisham is reported to be always transplanted and the kikar to be sown.

(*b*) *Jullundur.*—The Jullundur District Report shows that 5·25 miles of the road from Adampur to Kartarpur have been planted during the three years under report, 1·75 miles of this road having been previously planted, so that seven miles have now been planted in all, out of the total length of 13 miles. Thirteen miles have also been planted of the Jullundur-Nurmahal road, of which the entire length is 16 miles. The road from Nakodar to Dakhni Sarai, 5 miles has been wholly planted during these three years. Parts of the roads from Nakodar to Sidhwan ferry (2 miles). Phillour to Samrai (two miles), and Rahon to Phillour (1 mile) were planted during 1887-88. Gaps and blanks were filled up on all the metalled roads of the district as well as the principal *katcha* roads.

Earth-protectors were built round all the new trees planted, and in certain cases thorn fences put up. In all 21,219 trees are reported to have been planted in the three years on roadsides by the agency of the District Board, of which about 13 per cent. are said to have failed, the failures for want of a proper establishment which has since been maintained, having been very much greater in 1887-88, than in the two following years taken together.

(*c*) *Ludhiana.*—In the Ludhiana District four miles of the roads from Samrala to Chawa were planted in 1887-88.

In 1888-89, the roads planted were —

	Miles.
Ludhiana to Laltar	... 5
Samrala to Bahlolpur	... 10
Samrala to Kheri	... 12
Khannah to Amloh	... 1

while in 1889-90, two miles of the road from Samrala to Chawa, and one mile of that from Samrala to Kheri were planted. Gaps and blanks are also reported to have been filled up.

(*d*) *Hoshiarpur.*—No planting appears to have been done in the Hoshiarpur District during 1887-88. In 1888-89, 4·78 miles were planted according to the statement for that year, but nothing is said on the subject in the report.

Full details are given of the planting on several roads in the year 1889-90 on a total length of 53 miles, *viz.* :—

13·00	miles in the	Hoshiarpur	Tahsil.
17·50	ditto	Dasuyah	do.
10·75	ditto	Garhshankar	do.
11·75	ditto	Unah	do.

13,491 trees were planted out in all, and this seemingly in the year 1889-90, for the report appears to deal throughout with figures for this one year only. Why nothing was done in 1887-88 is not clear, but columns III and IV of the printed Return for that year are blank.

Income.—The income from arboriculture in the four Districts now reported on is noted in the table below for the three past years :—

	Year.	Ornamental gardens.	Nurseries.	Groves and avenues.	Miscellaneous.	Total.
		Rs.	Rs.	Rs.	Rs.	Rs.
Ferozepur	1887-88.	...	...	1,496	...	1,496
Jullundur		909	426	4,253	...	5,588
Ludhiana		483	254	1,864	504	3,105
Hoshiarpur		408	...	3,977	...	4,385
Ferozepur	1888-89.	...	37	6,755	...	6,792
Jullundur		904	330	7,526	...	8,760
Ludhiana		95/8	299	3,094/11	712/10	4,202
Hoshiarpur		547	...	4,675	...	5,222
Ferozepur	1889-90.	...	20	5,485	23	5,528
Jullundur		545	365	6,289	...	7,199
Ludhiana		75	96	3,051	831	4,052
Hoshiarpur		2,928	...	3,934	276	7,138

The figures for the years 1887-88 and 1888-89 for the Ferozepur and Hoshiarpur Districts have been taken from the printed statements for those years, and I note that those given in the Ludhiana District statement vary considerably in the details when compared with the printed Returns. The figures given above have been extracted from the accompanying statement, those given in the printed Returns are for convenience of reference noted below :—

	1887-88.	1888-89.
Ornamental gardens	504	445
Nurseries	234	...
Groves and avenues	2,318	3,556
Miscellaneous	...	202
Total ...	3,056	4,203

In the aggregate the difference is Rs. 49 in 1887-88, and only one rupee in 1888-89.

Ferozepur.—No explanation of the figures has been offered in the report of the Ferozepur District, as to the cause of so small an income having been realized in 1887-88, or the sudden rise from Rs. 1,496 in that year to Rs. 6,792 in 1888-89. The income in 1886-87 was, I see on referring to the statement appended to the last triennial report, Rs. 2,915.

Jullundur.—The Deputy Commissioner of Jullundur reports the causes of increase or decrease in the receipts under each head, and these need not be repeated, except that I may mention that the principal reason for a larger income in 1888-89, exceeding that of the year previous by Rs. 3,172, and that of 1889-90, by Rs. 1,561, is that a very large number of dead trees were sold in that year, when a forester was employed, who was allowed a commission on the sales, and therefore doubtless made it his business to take an interest in swelling the receipts from this source as far as possible. The appointment has been abolished since September 1889 : and the selling of withered or fallen trees entrusted to the Local Boards.

Ludhiana.—Details of the income with explanation of the increases and decreases are furnished in the report of the Ludhiana District at some length. Under the receipts from ornamental gardens, an item of Rs. 303 on account of sale proceeds of loppings of trees in the garden at Bassian was included in 1887-88, which is the chief cause of the income that year being so much in excess of that of the two following years.

There is a falling-off of about Rs. 200 in the receipts from lopping of trees in nurseries in the last year (1889-90), compared with the figures for the year previous. Under "groves and avenues," the sale proceeds of loppings and dead trees have risen considerably year by year, and it is due to this source chiefly that the total income has steadily increased from Rs. 3,105 in 1887-88 to Rs. 4,053 in 1889-90.

Hoshiarpur.—Some details of the income in the year 1889-90 in the Hoshiarpur District are stated in the Deputy Commissioner's report, but nothing in the way of explanation is offered to show how the exceptionally large item of Rs. 2,928 has been shown under head "ornamental gardens".

The total income in this district too has steadily increased from Rs. 3,607 in 1886-87 to Rs. 7,138 in 1888-89.

Expenditure.—In the following table is shown the expenditure during the same period for which the income has been noted above :—

	1887-88.	1888-89.	1889-90.
	Rs.	Rs.	Rs.
Ferozepur	9,273	8,793	10,129
Jullundur	8,466	8,610	8,990
Ludhiana....	7,808	10,104	10,672
Hoshiarpur	7,825	7,682	8,722

For the extra outlay in Ferozepur and Hoshiarpur during 1889-90, no explanation has been given. In Ludhiana too the expenditure compared with that in Jullundur is high. The establishment employed is detailed at length in the Deputy Commissioner's report, and the matter calls for no remark, except that the so-called station garden, known also as the park or "Rakh," seems a somewhat expensive institution, costing the Board Rs. 2,000 per annum for the establishment engaged in its care. The extra outlay of about Rs. 400 in 1889-90 in Jullundur is said to be due to extra watering establishment having been maintained owing to want of rain. Other fluctuations in the charges call for no comment.

Financial results.—Briefly the financial results may be noted as below :—

	Ferozepur.		Jullundur.		Ludhiana.		Hoshiarpur.	
	Income.	Expenditure.	Income.	Expenditure.	Income.	Expenditure.	Income.	Expenditure.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1887-88	1,496	9,273	5,588	8,466	3,105	7,808	4,385	7,825
1888 89	6,792	8,793	8,760	8,610	4,202	10,104	5,222	7,682
1889-90	5,528	10,129	7,199	8,990	4,053	10,672	7,138	8,722

Net results.

	1887-88.		1888-89.		1889-90.	
	Surplus.	Deficit.	Surplus.	Deficit.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Ferozepur	...	7,777	...	2,001	...	4,601
Jullundur	...	2,878	150	...	...	1,791
Ludhiana	...	4,703	...	5,902	...	6,619
Hoshiarpur	...	3,440	...	2,460	...	1,584

Arboriculture in the hands of private persons or village communities.—Only in the Jullundur District does any notice appear to have been taken of a point to which attention is invited in para. 12 of the set of instructions, as to work done by private persons and village communities. Colonel Roberts has, however, little to say on the subject. Some of the more well-to-do landholders do turn their attention to the culture of fruit trees, especially the mango, for which the soil of the District is well adapted; but in the general progress of arboriculture few private individuals take much interest.

Sale or grant of fruit trees.—Fruit trees are reported to be "sold in the public gardens at Jullundur at fixed prices, and no other arrangement made for their distribution among villagers." In Ferozepur about 15,000 young plants of the Arabian date, introduced into the District by Mr. O'Brien, when Deputy Commissioner there, have been gratuitously distributed among the cultivators, and some 4,000 mango trees have likewise been given away from the nurseries. Saplings of shisham, siras, jaman, pomegranate, lime and Orange trees are said to be given gratis in the Ludhiana District to zamindars on application, though such applications are reported to be very few in number.

In Hoshiarpur it is reported fruit trees are supplied to zamindars at half price.

General Remarks.—I have nothing particular to add in the way of special remarks, though I may note that I do not concur with the Deputy Commissioner of Ludhiana in the view that the positive advantages of roadside trees and avenues generally are very problematical"! No doubt the difficulties of supervision are great, but the benefits of shade on the highway and roads generally do not require to be described to be understood and appreciated, and it is a mistake to view this vast and widely acknowledged benefit from the point of its being a financial success or otherwise.

The maps required by para. 11 of the instructions are appended to the District Reports.

Kangra District.—Rainfall.—The rainfall according to Return No. 1, was 89·21 inches in 1887-88, 112·40 inches in 1888-89 and 122·53 inches in 1889-90, while the average of past years, as exhibited in column 5 of the same Return, is 124·55 inches.

Nurseries.—Return No. II shows that the area under nurseries at the beginning of 1887-88 was 42·07 acres, and only 6·36 acres at the end of 1889-90, excluding that previously under, or transferred to, the charge of the Dharmsala Municipality. This decrease in the area under nurseries is accounted for, thus—After allowing for area added during 1887-88 and 1888-89, and for that given up or transferred to groves during the same period, the actual area at the end of the latter year, was 56·43 acres, to this 1·81 acres was added in 1889-90, making the total 58·24, of this again 11·75 acres was transferred to groves in Nurpur ; 39·16 acres to plantations in the Municipal Committee of Dharmsala, and 0·97 acres given up, or transferred to other groves, &c. The area shown in the same Return as under "nurseries" in the Dharmsala Municipality, was only 3·81 acres at the beginning of the year 1889-90 and 3·67 acres at its close.

Plantations.—Return No. III shows 48·76 acres under plantations at the beginning of 1889-90, and 58·13 acres at the end of that year, all under the charge of the Dharmsala Municipality. This includes the 39·16 acres transferred by the District Board. The area sown or planted during the year was 13·59 acres, and the area on which sowings, &c., failed, 4·22 acres.

In the report rendered by the President of the Committee, it is stated that the work done during 1889-90 was not very satisfactory. "The sowing in the nurseries suffered from want of rain," and that the failures shown in column 6 of Statement No. III, "are also due to the same cause. It can hardly, I think, be fairly ascribed to this cause, seeing that the rainfall of the District was, in the year referred to, 10 inches higer than the fall of the year preceding, and 33 inches higher than that of 1887-88.

Groves.—The groves in the District are said to be in the Nurpur and Kangra Tahsils only. These appear to have started with planting an area of 17·60 acres in 1888-89. On the slopes of the hill, on which the Dâk Bungalow of Nurpur stands, eucalyptus, date, bamboo, bahera and jaman plants have been put down, and chil, khair and ambaltas seed sown. The entire area has been fenced in with bamboo and cactus, the length of the fence being 3,216 feet. A statement of the operations and cost of this work is appended, and the initial cost is shown to be Rs. 570-10-9, a further cost of Rs. 334 was incurred on this grove in the following years :—

In 1889-90 an area of 1·45 acres was laid out in small groves in the compounds of the tahsil, dispensary and Patwarkhana.

Avenues.—Return No. V shows that the length of road stocked with trees at the beginning of 1887-88 was 599·62 miles, and at the end of 1889-90, 632·88 miles, exclusive of 2·75 miles within the Dharmsala Municipality. It is explained that "nearly 18 miles of road in the Nadaun Jagir which was formerly accounted for by error" have now been excluded from calculation. Details of the number of miles of road planted with young trees and of failures are given in the statement, and tahsil by tahsil in the District Report. A very fair amount of work appears to have been done in the way of planting out trees on roadsides in the Hamirpur, Dera and Nurpur Tahsils.

The number of young trees planted within Municipal limits and the failures are shown in the table below :—

	Number of trees planted.	*Of those planted the No. of young trees that failed.*
1887-88	11,505	1,955
1888-89	11,399	Not stated.
1889-90	6,489	

Income.—The income during the past three years was as follows :—

	1887-88.	1888-89.	1889-90.
From ornamental gardens ...	174	204	192
„ nurseries ...	14	...	...
„ groves and avenues ...	218	622	434
Total	406	826	626

A sum of Rs. 109 was also realized during 1889-90 by the Dharmsala Municipal Committee, being the income from the public gardens in the station.

Expenditure.—The expenditure during the three years under report was—

	Rs.
In 1887-88	1,922
„ 1888-89	2,189
„ 1889-90	3,978

And that incurred by the Dharmsala Municipal Committee, within the last year, only Rs. 850. The outlay during the year 1889-90 was very heavy and no sufficient detail or explanation of the cause of this has been afforded in the District Report. It is noted in the column for remarks in Return No. VII that "many new nurseries have been established in pursuance of the sanctioned plans of arboriculture operations." I do not, however, find from the report that the operations have been such as to warrant so large an expenditure, while roadside planting was in point of fact, by no means so extensive as it was during the two years preceding.

Arboriculture in the hands of private persons, and the grant of fruit and other trees to such persons.—Nothing is said in the District Report as to whether fruit and other trees are given or sold by the District Board to the zamindars. The Dharmsala Municipal Committee have, however, it is remarked, distributed fruit trees to "enterprising European settlers at Dharmsala and in the Valley." English fruit trees of various kinds were imported from the Government Agri-Horticultural gardens, and those planted in the Katchery gardens are reported to be doing very well.

House owners in Dharmsala were also supplied with seedlings by the Municipal Committee, and are stated to have "made considerable planting of deodar on their estates."

General.—The District Report is somewhat meagre and unsatisfactory, and has not been compiled according to instructions; appended to it is a report prepared by the President of the Dharmsala Municipal Committee and another by the Assistant Commissioner of Kulu.

The success which has attended the sowings in the lower and warmer portions of the District of the Arabian, Egyptian and country date is gratifying.

LUDHIANA DISTRICT.

Statement No. I shows the rainfall as registered at the Sadr Station during the years 1887-88 to 1889-90. It will appear from the return that the rainfall has varied between 29·20 in 1887-88 and 21·57 in 1889-90.

The annual average fall of rain for the whole District has been—

1887-88	...	...	25·64
1888-89	...	...	29·08
1889-90	...	...	19·93

Nurseries.—Very little progress has been made under this head, and the area has fallen from 5·48 acres in 1887-88 to 4·31 in 1889-90.

There are at present six nurseries in the District—two at Sadr, one at Bassian, one at Jagraon, one at Samrala, and one at Khanna, in which saplings of shisham, jaman, pomegranate, lime, siras and orange trees are reared for plantation along the District roads. Saplings are also supplied gratis to the zamindars on application, but such applications are few, as the zamindars in this District do not take much interest in arboriculture, inasmuch as they use cowdung cakes for fuel, and obtain timber from village Shamilat lands.

Plantations—Statement No. III.—None in progress in this District.

Groves—Statement No. IV.—There is a plantation at the Sadr called "Rakh" in which trees have grown up and are no longer fit for transplantation; the area has therefore been now transferred to "groves," *vide* footnote (*a*) of the statement.

The increase in area under groves is due to the transfer of 206·25 acres of the "Rakh" land to this head.

Avenues—Statement No. V.—New trees were planted during the year 1887-88 on the first 4 miles of the road from Samrala to Chawa. In 1888-89 the following roads were planted with trees:—

Ludhiana to Lalton	...	...	...	5 miles.
Samrala to Bahlalpur	...	...	...	10 do.
Do. to Kheri	...	...	...	12 do.
Khanna to Amloh	...	...	...	1 mile.

In 1889-90 trees were planted on the following roads:—

Samrala to Chawa	...	...	...	2 miles.
Do. to Khere	...	...	...	1 mile.

The number of trees planted to replace old and decayed trees is given against each year in the column of remarks, Statement No. V.

The trees planted were chiefly shisham, siras, jaman, ber and mulberry.

Income from Arboriculture.

The income during the years under report was as follows:—

Ornamental Gardens.

Rupees 482-11-0 was realized in 1887-88 from sale proceeds of produce of the garden at Bassian, and the plantation called Ludhiana Park, "Rakh", and included a comparatively large item, *viz*; Rs. 303 on account of sale proceeds of loppings of trees, as pruning had not been carried out for some years past.

The income under this head in 1888-89 was only Rs. 95-8-0 realized from sale of fruits in the garden at Bassian.

In the year 1889-90 the income was only Rs. 75.

Nurseries.—The income from sale proceeds of loppings of trees, grass and other produce of nurseries during the years under report was as follows:—

1887-88	...	...	...	254
1888-89	...	...	...	298
1889-90	...	...	...	95

The falling-off in the income in the year 1889-90 is not satisfactory, and enquiries into the cause of this decrease will be made.

The income from groves and avenues has steadily increased from Rs. 1,864 in 1887-88 to Rs. 3,051 in 1889-90. This income is chiefly derived from sale proceeds of loppings and dead trees.

There is also considerable increase under miscellaneous income, *viz.*, from Rs. 504 in 1887-88 to Rs. 831 in 1889-90.

The total income in the years under report was as follows :—

1887-88	...	...	...	...	Rs. 3,104
1888-89	...	...	...	...	„ 4,201
1889-90	...	...	...	...	„ 4,053

This financial result is probably less unsatisfactory than would have been the case, if Tahsildars had not been appointed Presidents of the Local Boards of their respective Tahsils.

Expenditure.—The expenditure under each head, during the years under report was as follows :—

	1887-88.	1888-89.	1889-90.
	Rs.	Rs.	Rs.
Ornamental gardens	936	1,505	1,641
Nurseries	1,621	1,569	1,573
Plantation	...	288	...
Groves and avenues	5,167	6,658	7,360
Establishment for general supervision ...	84	84	98
Total ...	7,808	10,104	10,672

The following establishment was employed on maintenance of existing trees and plantation of new avenues during the past three years under report :—

1887-88.

12 Chowkidars	@ Rs. 5	= 60 per mensem	From April to July 1887.
1 Jemadar	on „ 7	= 7 „ „	
62 Bhisties	on „ 4	= 248 „ „	
12 Malis	@ „ 6	= 72	August 1887 to March 1888.
1 Jamadar	@ „ 7	= 7	
28 Beldars	@ „ 4	= 112	
67 Bhisties	@ „ 4	= 268	
1 Pair of bullocks for the nursery at Khanna		= 315	

1888-89.

12 Malis	@ Rs. 6	= 72 per mensem	From April 1888 to August 1888.
1 Jemadar	„ 7	= 7 do.	
28 Beldars	„ 4	= 112 do.	
67 Bhisties	„ 4	= 268 do.	
1 Pair of bullocks		= 15 do.	
15 Malis	@ Rs. 6	= 90	From September 1888 to March 1889.
1 Jemadar	„ 7	= 7	
28 Beldars	„ 4	= 112	
84 Bhisties	„ 4	= 336	

1889-90.

14 Malis	@ Rs. 6	= 84
2 Jemadars	„ 7	= 14
28 Beldars	„ 4	= 112
87 Bhisties	„ 4	= 348
1 Pair of bullocks		15

The establishment for gardens was as follows :—

Station garden "Rakh" at Ludhiana.

1887-88.

1 Gardener	@ Rs. 20	per mensum	...	... Rs.	20 per mensem.
1 „	„ 10	„		„	10 „
6 „	„ 5	„		„	30 „
6 Bhisties	„ 4	„		„	24 „
1 Sweeper	„ 4	„		„	4 „
7 Pairs of bullocks				... „	56 „
1 Beldar	...	...		„	2 „
5 Beldars	@ Rs. 4			„	20 „

1888-89.

The same as above.

1889-90.

The same as above.

The establishment for nurseries was as follows :—

1887-88.

3 Gardeners	@ Rs. 6	...		... Rs.	18
2 Beldars	„ 4-8	...		... „	9
7 „	„ 4	...		... „	28
3 „	„ 4	...		... „	12

1888-89.

The same as above.

General Remarks.—Expenditure is largely in excess of income, and increase of income has by no means kept pace with increase of expenditure.

The positive advantages of roadside trees and avenues generally are very problematical, the benefits of shade are dubious as against the risks of fever traps, the pest of insects, and the obstruction of air while the cost of establishment and difficulties of supervision are great. Roadside plantings, I am disposed to consider, as an unprofitable survival from the days when central operations and scientific forestry had not been introduced into the Punjab. Probably the correct policy for this District will be found to be greater centralization of operations by increased attention to suburban groves and gardens, and greatly diminished expenditure upon roadside avenues. The nurseries should perhaps be restricted to the supply of saplings for private planting, and for one or two large District plantations to be worked with the assistance and on the methods (so far as applicable) of the Forest Department.

Detailed suggestions would, however, be out of place, pending the receipt of the official manual of arboriculture, it is clear that the time has come when, so far at least as this District is concerned, a complete change of system and reconsideration of all details are urgently required. The public appreciation of groves and gardens is great, and I believe they can be made less unprofitable: the public appreciation of roadside plantings and avenues is, with rare exceptions, in favour of suburban and Canal side avenues, *nil*; and they are, financially speaking, worked at a dead loss which becomes more and more heavy as they are extended further afield.

The actual results attained in the past will not, however, be thought unsatisfactory with reference to the objects prescribed for attainment, but the expense incurred cannot, I fear, be so easily defended.

FEROZEPORE DISTRICT.

The result of the past three years arboricultural operations is to be found in the accompanying seven statements prepared under the new forms.

About 17 miles of new trees have been successfully planted during the past three years. Most of these trees owe their successful growth and the present promising condition to the canal water partly taken from the Sirhind Canal and chiefly from the Inundation Canals of the District by means of digging $1\frac{1}{2}' \times 1\frac{1}{2}'$ ditches along side of the roads where new trees have been planted and sown. As a rule the *Tali* or *shisham* is always transplanted, and the *Keekar* or *Babul* is always sown, and experience shows that in this District both this kind thrive with canal water.

In addition to the above-mentioned roadside trees, there are about 350 miles of successfully grown trees on the banks of the Inundation Canals of this District, but as these trees belong to the owners of the land through which the said Canals pass, (the Canals having been dug by the people themselves without taking any compensation for the land), therefore these trees have not been included in these Statements.

Likewise the Nawab of Mamdot has sucessfully planted more than 60 acres of land with trees near his Canals and on his own land, in addition to the lines of the trees now standing in good condition along side his Canals, which (trees) are of course included in the above-mentioned total of 350 miles, as a total for the whole District as regards the District Canal side trees.

The Municipal Committee of Fazilka have also got about thirty acres of good plantation, mostly Keekar, near the town of Fazilka, which (plantation) is irrigated by Mobarukwah, the Inundation Canal in that Tahsil.

The Kehruwala Government plantation though separately reported under separate instructions, may also be mentioned here, as this report is expected to give a general idea (perhaps) of the arboriculture of the entire District. Altogether about 423 acres of land was taken up of which 55 acres have hitherto been successfully planted by means of a Canal cut taken from the said Mobarukwah.

About 15,000 young plants of the Arabian dates, introduced in this District by Mr. O'Brien, the then Deputy Commissioner, have been gratuitously distributed among the cultivators. Likewise about 4,000 young mango trees have been given away from the nurseries that are kept up in suitable localities in this District. A few of the young trees of the new dates—about 4 year old—have for the first time blossomed, somewhat poorly in a few places, and it is hoped that next year they may begin to yeild fruit.

In conclusion, I beg to state that old and dead trees, as also the usual loppings of other trees, have been sold under the supervision of the various Local Boards during the past year for Rs. 5,528, and that Mohamed Yusaf, Darogha of arboriculture of this District has as usual done good work.

JULLUNDUR DISTRICT.

Rainfall.—The rainfall during the three years under report was —

1887-88	...	...	...	...	... 26·9
1888-89	...	...	...	...	... 2·54
1889-90	...	...	...	...	... 1775

It will be observed that while the average of the past years was 28 inches (as per return), the fall during the period of the report did not in any year reach that point; while last year it was conspicuously low, amounting to 17·75 inches only. The fall during the winter months was very scanty; in the rainy season too, it was much below the average, there being no fall in September. Water in the wells in consequence has gone down to the lowest level, and all tanks and low grounds are dry. The Board last year had therefore to employ a larger number of Bhisties, and that for a longer period than usual for watering roadside trees.

As regards the average rainfall, 28 inches, this was taken from the *Punjab Gazette, vide* note at foot of the return; and it has been entered in accordance with a statement received from the Director of Land Records in May 1887, which has been computed on the average fall of the past 23 years. If, however, an average be now struck, it will surely be less than that taken three years ago.

Nurseries.—Of 22 nurseries having an area of 19 acres, five with an area of 3·95 acres have been transferred to groves, as the trees have become too old for transplanting. In column 3 the area entered for 1890-91 is that portion of the nurseries which was not before shown, as with reference to the headings of the old statements, the portion not sown with trees at that time was omitted; while in accordance with the headings of the new return, the whole area, whether cultivated or not, but set apart for nurseries, has been entered.

The nurseries are sufficient for the requirements of the District; 17,320 trees were given to zamindars, the Executive Engineer, Provincial Works, and the Cantonment Magistrate, free of cost from the District nurseries during the past three years, besides those planted on the roads.

Plantations.—These are 19 in number on the banks of the river Sutlej, having a total area of 201 acres. In 1887-88 and 1888-89, the number was 22 with an area of 224 acres, three, *viz.*, Jania, Yakkopur and Mirajwala area 4·11 and 8, total 23 acres were washed away by the action of the river. The areas of these three are very much subject to inundation, should they be reclaimed in the current year, I think they should not be classed under "plantations," but as other property of the Board.

Thirty-five acres were sown in 1887-88 (31 of Lisarah and 4 of Sailkianah, Tahsil Phillour), while nothing was done in 1888-89. In 1889-90, 31 acres of the Lisarah plantation, and one acre of another in the Nakodar Tahsil were sown, the cultivation of the latter was successful, while that of the former was again a failure, as will be seen from column 5, where 41 acres are entered as 'failures.' The remaining 10 acres represent the area of Madhopur plantation in the Nakodar Tahsil which has been during the year (1889-90) washed away by the river.

Shisham or kikar is generally sown in these plantations, and these are planted with the intention of producing a timber crop.

Groves.—There was only one statement in 1887-88 and 1888-89 for both plantations and groves headed "Groves;" but in 1889-90, two separate statements have been provided. The figures entered before in the statement for groves have therefore been taken to that for plantations, as in accordance with the meaning of the term 'grove' now given, the areas should come under plantation and not under grove.

In this statement with reference to foot notes, those nurseries where trees have become too old for transplanting, have only been entered.

Avenues.—The work was chiefly confined to the following new lines of roads :—

(1). Adampur *viâ* Alawalpur to Kartarpur (Jullundur Tahsil).

This road is 13 miles long—5¼ miles have been planted during the three years, and 1¾ miles previously, making a total of 7 miles. The work on this line will continue on till it is completed.

(2). Jullundur to Nurmahal, 16 miles long.

The work on this road was carried on in both the Jullundur and Phillour Tahsils 13 miles have been planted, the remaining 3 miles will be finished during the current and the next year.

(3). Nakodar to Sarai Dakhni.

This road is little over 5 miles long, which has been wholly planted during the period under report.

In addition to these three lines on which work was done during the three years of the report, the following roads were also planted in 1887-88 :—

(1) Nakodar to Sidhman ferry *viâ* Mahatpur	...	...	2 miles.
(2) Phillour to Samrai *viâ* Rurka	...	...	2 „
(3) Rahon to Phillour *viâ* Awar	...	...	1 mile.

Besides the above new work, gaps and blanks have been filled up in all the metalled roads of the District, as well as in the principal kacha roads. I may here mention two lines on which the work in filling blanks was chiefly done—(1) the metalled road from Phagwara to Nawashahr, and (2) unmetalled road from Phillour to Rahon, there were very old trees on these roads which are dying off, a regular line of trees was planted in previous years on a portion of the roads and also during the period under report.

Earth-protectors (Gamlahs) have been made round all the new trees planted, and in certain cases thorn fences put up, but these very soon get dried and crumble down, the earth-protector is more lasting and cheap, a gang of 10 coolies can make from 10 to 12 Gamlahs a day, 6 feet in diameter and 3 feet high.

During the last three years, 21,219 trees were planted on the roads by the agency of the District Board, of which 3,916 died, or a little over than 13 per cent., a very large number, *viz.*, 2,207, out of 5,482 planted died in 1887-88, while during the two following years only 1,709 died, the reason being that there was no regular arboricultural establishment then, but since 1888-89 a gang of 10 coolies and a mate has been kept up in each tahsil, besides Bhisties who are temporarily employed.
Shisham is generally planted on the roads in this District.

With reference to the instructions received for the preparation of statements this year, Municipal and Station roads have also been entered, while beforeonly District Board roads were shown.

Income.—The income derived from arboriculture during the past three years, *vide* statement is as follows :—

Year.	Gardens.	Nurseries.	Groves and Avenues.	Total.
1887-88	909	426	4,253	5,588
1888-89	904	330	7,526	8,760
1889-90	545	365	6,289	7,199

The decrease in income during 1889-90 under "gardens," as compared with the two previous years, is on account of the Nawashahr Baradari gardens having been leased for five years, while before the whole income which amounted to about Rs. 350, was credited and the expenditure per contra, charged to District Funds.

Under nurseries the income derived from the sale of fruit, &c., of the Jullundur nursery, is shown as well as sale of grass and dead trees from other nurseries, the income is therefore fluctuating, which accounts for the difference.

As regards the groves and avenues, the larger income in 1888-89, as compared with 1887-88 or 1889-90, is due to the sale of a very large number of dead trees in that year, when a forester was employed, who used to get commission on the sales ; but this appointment has, since September 1889, been reduced by the District Board, and the arrangement for selling trees made over to the Local Boards, with reference to the matters transferred to their control, by the District Board, under Government Notification No. 73, dated 23rd April 1889.

I am not in a position to give my opinion as yet as to how this arrangement has worked, but will do so next year, after I have had full one year's experience of its working.

Expenditure.—The following table represents the expenditure on arboriculture :—

Year.	Gardens.	Nurseries.	Plantations.	Groves and Avenues.	Total.
1887-88	3,576	2,199	467	2,224	8,466
1888-89	3,304	959	20	4,327	8,610
1889-90	2,607	1,101	47	5,235	8,990

The decrease in expenditure under " gardens " in 1889-90, as compared with the two previous years, is on account of the dismissal of the Kacherry compound and Nawashahr Baradari gardens' establishment.

Nurseries.—The comparatively large expenditure in 1887-88, is on account of a larger number of coolies then employed, who were in the following year dismissed, and also to extra expenditure on a plot of state land added to the nursery at Jullundur, the plot was afterwards, on orders received from Commissioner, given back to Government.

Plantation.—In 1887-88, an establishment of 4 guards at Rs. 4-8-0 each, and 1 Jemadar at Rs. 15 = 33 per mensem was entertained for looking after the plantations, but in April 1888 these were dismissed as unnecessary, and this accounts for the larger expenditure in that year.

Avenues.—The smaller expenditure in 1887-88, as compared with the two following years, is due to the fact that in that year, no separate establishment was employed for maintenance of roadside trees, the coolies entertained for repairs to metalled roads used to look after avenues ; but since 1888-89, a separate arboricultural establishment has been kept up. Again the increase in 1889-90 over 1888-89, is owing to the entertainment of more extra bhisties for watering trees in consequence of the dry weather.

Work done by private agency.—As regards work done by private persons and village communities in the line of tree planting, I have very little or nothing to record ; the people, as a rule, only plant trees when they sink a well and not otherwise.

In some villages, however, there are private plantations on common land, planted some 12 or 15 years ago, but since then very little progress has been made, as all the Shamilat land has been distributed at the last settlement among the proprietors, and they have, and are, including their portions to their fields.

Cultivation of fruit trees.—The people of this District on the whole are not particularly desirous of cultivating fruit trees, as the land cultivation yields more income than gardens. There are notwithstanding a good number of very old gardens planted years ago, when the value of land was not so much as it is at present; besides there are a few of recent date planted by rich landowners.

The principal fruit tree in this District is the mango, as the soil of Jullundur is very favorable to its culture. Ber (plum) mulberry, fig and orange also grow well. The gardens are chiefly found near the towns, specially at Jullundur, Nawashahr, Alawalpur and Kartarpur, while in villages these are of rare occurrence, as the consumption of fruit is more in towns than in villages. I may here mention that Nawashahr abounds with mango gardens ; a very large portion of the town land is under them. This town is an exception as nowhere else this is the case.

Fruit trees are sold in the public gardens at Jullundur at fixed prices, and no other arrangement is made for their distribution among villagers.

Map of the District.—The map of the District showing the arboricultural operations on the roads, as is desired by para. 11 of the instructions for the preparation of the report, accompanies.

HOSHIARPUR DISTRICT.

I.—Rainfall.—The season was one of deficient rainfall. The actual rainfall amounted to 30·57 inches being 4·61 inches under the average of last year, as shewn in last printed Arboriculture Report.

II.—Nurseries.—The area under nurseries at the beginning of the year was neither added to nor diminished during the year. The saplings transferred to avenues being merely replaced.

III.—Groves.—The 12 acres shewn as having been planted during the year are part of the Charigar garden, a piece of land 15 acres in extent, which was purchased by the District Board sometime ago for a Town Hall. During the year under report 12 acres have been laid out as a garden and stocked with fruit trees from Lahore and Saharanpur, as detailed below :—

From Saharanpur—
Malta oranges.
Cintra oranges.
Kabul nectarines.
Country round peaches.
China flat peaches.
Alu Bukhars large.
Large Yellow Aluchas.
Black Aluchas.

From Lahore—
Cintra oranges.
Pommalos.

Loquats and Pears were procured locally, and it is hoped that this garden, in addition to the old Government Gardens, will answer all demands for the supply of fruit trees in the District, as well as yield a handsome revenue in time. Fruit trees are supplied to Zemindars at half price.

IV.—Avenues.—The length of roads planted during the year was 53 Miles as below :—

	Miles.
Hoshiarpur Tahsil.	
I.—Hoshiarpur and Phagwara Road	8
II.—Hariana and Sham Road	5
Dosuah Tahsil.	
I.—Tanda and Sri Hargovindpur road from village of Pulpakhta to Rara Ferry	3
II.—Miani and Kalian road from Pulpakhta to Kalian	4
III.—Extension of line of roadside trees from Dosuah to Bhet Ferry	4·5
IV.—Completion of avenue from Dosuah to Hajipur ...	3
V.—Completion of avenue from Mokerian to Hajipur ...	3
Garhshankar Tahsil.	
I.—Extension of avenue from Handowal to Jaijon ...	3
II.—Completion of avenue on Balachaur and Nawashahr road from Balachaur to Jadla ...	2·5
III.—Completion of avenue on Hoshiarpur Ropar road from Balachaur to Ropar Ferry	5·25
Unah Tahsil.	
I.—Completion of avenues from Una to Anandpur *viâ* Nangal	3·25
II.—Completion of avenues from Unah to Awankot Ferry *viâ* Santokgarh, Bhalan and Nurpur ...	3·80
III.—Completion of avenue from Unah to Amb *viâ* Chuararu	4·70
Total ...	53·00

The extension of avenues on the above named roads was carried out in accordance with the plan of arboriculture operations for three years submitted to Commissioner with this Office No. 418, dated 15th October, 1888, and sanctioned provisionally by the Conservator of Forests, Punjab, in his letter No. 1,912, dated 17th December 1888, to Commissioner's address. The progress made during the year under report is satisfactory, and trees will be steadily planted till the avenues on the roads named above, have been completed.

The total number of trees planted out were 13,491 as detailed below :—

Mangoe	2,915
Jaman	993
Shisham	8,232
Tun	217
Eucalyptus	3
Bambu	981
Sarin	34
Tut	68
Pipal	3
Pilkan	4
Bed	25
Rajain	16
Total ...	13,491

V.—Establishment.—The establishment employed during 1889-90 consisted of 4 Jamadars and 107 Malis distributed as follows :—

Hoshiarpur Tahsil.

1	Jamadar	...	...	...	@ Rs.	10	0	0 per mensem.
1	Mali	...	...	...	„	5	0	0 „
22	Malis	...	...	...	„	4	0	0 „

Dosuah Tahsil.

1	Jamadar	...	...	...	@ Rs.	7	8	0 per mensem.
1	Mali	...	...	...	„	5	0	0 „
2	Malis		...	...	„	4	8	0 „
22	Do.		...	...	„	4	0	0 „
2	Do.		...	...	„	3	0	0 „

Garhshankar Tahsil.

1	Jamadar	...	...	...	@ Rs.	7	0	0 per mensem.
28	Malis	...	...	...	„	4	0	0 „

Unah Tahsil.

1	Jamadar	...	...	...	@ Rs.	5	0	0 per mensem.
1	Mali	...	...	...	„	6	0	0 „
1	Do.	...	...	...	„	5	0	0 „
24	Malis	...	...	...	„	4	0	0 „
1	Do.	...	...	...	„	3	0	0 „

The establishment was supervised by Tahsildars and Presidents of Local Boards.

VI.—Financial Results.

	Hoshiarpur.	Dosuah.	Garhshankar.	Unah.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.
Income.					
By sale of trees and dried timber ...	1,702	478	1,162	348	3,690
„ grass	34	3	...	...	37
„ Khar Kana	16	62	162	5	245
„ Lakh	97	169	281	172	719
„ fruits	157	20	29	1	207
Miscellaneous	3	35	1	...	39
Gardens, groves, &c.	2,077	94	...	30	2,201
Total					7.138
Expenditure.					
Establishment	2,069	1,432	1,350	1,370	6,221
Tools and repairs to Tools	204	2	25	53	284
Extra establishment	160	228	146	192	726
Miscellaneous	1,362	70	...	59	1,491
Total					8,722

The amount realized from encamping-grounds which is credited to Provincial Funds, amounts to the sum of Rs. 3,752, being made up as follows :—

Income.	Hoshiarpur.	Dosuah.	Garhshankar.	Unah.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.
By farming land	892	742	372	66	2,072
„ sale of grass	14	63	30	116	223
„ „ Lakh	...	...	...	...	...
„ „ Munj grass	...	8	...	...	8
„ „ timber	51	...	1,300	...	1,351
„ „ fruit	86	...	10	2	98
Total ...	1,043	813	1,712	184	3,752

The income realized in 1888-89, amounted to Rs. 7,286. The income realized in current year from both sources amounts to Rs. 8,475, shewing a difference of Rs. 1,189 in favor of the year 1889-90. This increase is due to the large sum of money realized from sale of timber from the Bharthala encamping-ground in Tahsil Garhshankar.

VII.—A map of the District shewing the extent to which roads have been stocked with trees is appended.

KANGRA DISTRICT.

I.—Tahsil Kangra.

Nurseries.—Eight new nurseries were established over 2·52 acres. Tun, shisham (tahli) and mango seeds were sown in them. One thousand, nine hundred and two of the seedlings which had grown two feet highwere transplanted.

Groves.— One decimal forty-five acres in the tahsil dispensary and Patwarkhana compounds are planted as groves which contain 259 trees of different kinds.

Roads.—Of the 51·33 miles of road in the tahsil, 19·50 miles cannot be planted with trees. Out of the remaining areas 14·20 miles are already planted with trees on both sides, and 3·76 miles have now been planted with trees (on both sides). Old trees died on ·35 acres. The trees planted are in good condition.

Fencing and watering.—Fencing and watering are done by means of a permanent establishment of coolies and bhisties.

Income.—Rupees 82-3-4 were realized from sale of roadside trees, and Rs. 15-5-3 from sale of vegetables.

II.—Palampur.

Expenditure.—The expenditure sanctioned for the year, according to the plan of operations was Rs. 304. The actual expenditure was Rs. 332-6-0.

The details are—

	Rs.	A.	P.
Nurseries, old	86	0	0
Do. new	216	6	0
(Gardeners and laborers, Rs. 200 and manure Rs. 16-6-0)			
Avenues maintenance	30	0	0

Nurseries.—New nurseries have been established at Baijnath, Palampur, Chachian and Bhawarna, over an area of 1 acre. One hundred trees have been transplanted on ·10 acre in and around the station of Palampur. The growth in the nurseries was not sufficient to allow of more trees being transplanted.

The area of the old nurseries was 0·35 acre, and the area at the end of the year was therefore 1·35 acres.

Income.—The income was Rs. 11-15-3 as follows :—

	Rs.	A.	P.
Vegetables sold	9	10	6
Other	2	4	9

III.—Hamirpur.

Road.—In 1888-89 trees were planted on 6·56 miles, of which the loss was 2·55 miles. In 1889-90 trees were planted on 6 06 miles, and the loss was 38·99 miles. Of this 36·18 was nominal, being area transferred to Palampur and Nadaun, leaving a real loss of 2·81 miles in the last year.

The Mundi-Phagwara road is 40 miles long, and all the trees cannot be taken proper care of.

Nurseries.—The areas proposed and actually used for nurseries were :—

	Proposed.	*Planted.*
1888-89	·72	·75
1889-90	·40	·53

Expenditure.—The expenditure was :—

	Rs.	A.	P.
1888-89	530	2	0
1889-90	571	10	0

Income.—The income was :—

	Rs.	A.	P.
1888-89	39	4	3
1889-90	113	5	10

All the income was derived from sale of trees.

Date and mango seedlings from the distillery nurseries were transplanted on the Mandi-Phagwara road.

In the tahsil ornamental garden, Bombay mangoes, pomegranates and grapes were planted, having been imported from Hoshiarpur.

IV.—Dera.

Roads.—According to the sanctioned plan of operations, 1,280 trees (shisham, jamun mango, &c.,) were planted on 4·50 miles of the road from Jawala Mukhi to Nakehr Khad. Of these 200 trees were lost and replaced by others. The full number 1,280 are therefore planted and in good condition.

Nurseries.—New nurseries were established in two places :—

Village Bohan	·12
„ Dera	·04

Road.—The nurseries are in good condition. Two hundred trees which had died out of those planted on the Jawala Mukhi road in 1883-89 were replaced by new trees.

Watering and fencing were done properly.

V.—Nurpur.

Nurseries.—The three existing nurseries were maintained at :—

Village Indaura	·19
„ Bahadpur	·19
„ Basa	·18
Total ...	·56

Groves.— Seventeen decimal sixty acres of land surrounding the Nurpur Dâk Bungalow hill have been planted with trees. The plantation is in charge of the Forest Ranger, and a copy of his detailed report of the operations is annexed for reference.

Roads.—Trees were planted on 7·77 miles, and the loss was on 1·75 miles.

The winter rains held off, and were scanty; extra establishment was therefore put on for watering and maintaining the existing trees.

Nine hundred trees were planted on the Indaura road. The condition of the trees planted out during the year was good.

Income.—The income from sale of dead and decayed trees was as Rs. 57-1-9.

Expenditure.—The total expenditure on arboricultural operations was Rs. 855-7-9, *viz.*:—

	Rs.	A.	P.
Dâk Bungalow Hill	334	0	0
Other	521	7	9

Statement showing the total cost from the commencement of cultural operations on the Nurpur Dâk Bungalow Hill in August 1888, *to the* 18*th March* 1890.

The area operated on is 22 ghomaos.

The total cost of the work = Rs. 570-10-9

The detail of the work done for the above sum is as follows :—

		Rs.	A.	P.
1.	Making a fence of bamboo, cactus and thorns round the area enclosed for sowing and keeping it in repair. Length of fence = 3,216 feet.			
2.	Digging, preparing, sowing and resowing, 6,310 patches.			
3.	Transplanting 650 bahera and jaman plants, from nursery into plantation, also putting down Eucalyptus, date and bamboo plants.			
4.	Transplanting 117 avenue trees,			
5.	Cost and carriage of chil, khair and ambaltas seed ...	36	3	0
6.	Carriage of Eucalyptus, date and bamboo plants from Dera to Nurpur	12	10	6
7.	Preparing 4,250 patches with seedlings to water	12	0	0
8.	Watering 4,250 patches from the 21st October to 16th December 1889	101	4	0
9.	Chaukidars pay from 13th March to 31st December '89 ...	26	5	2
10.	Watering seedlings from the 21st November to 16th December 1889 ... ... (204 men @ Re. 0-4-0 each).	51	0	0
11.	Preparing 4,250 patches to receive water	12	0	0
12.	Transplanting trees on avenue in place of those dead, repairing fence, &c., from 21st November to 31st December 1889	21	14	0
13.	Clearing lines, weeding patches, digging holes for plants, and repairs to hedging from the 12th February to 18th March 1890	60	12	9

Dharmsala.

The nurseries at Dharmsala formerly under the management of the District Board were in 1888-89 transferred to the Municipal Committee, which has since done much towards stocking them with suitable plants and seedlings, (*vide* the report of arboricultural operations in Dharmsala).

English fruit trees.—Grapes, pears, apples, peaches, oranges and limes, have been imported in considerable numbers from the Government Agri-Horticultural gardens for propagation and have been planted in the Kacheri gardens at Dharmsala and distrued to enterprising

European Settlers at Dharmsala and in the valley. The trees imported for the Kacheri gardens are doing very well, and are being used for purposes of propagation by means of cuttings, grafting and budding. A number of grafts from many of these fruit trees are now ready for distribution to the tahsil gardens.

General.—Arboricultural operations are now being carried out throughout the District, in accordance with the quinquennial plans approved by the Conservator of Forests, in December 1888.

Considerable quantities of Arabian, Egyptian and country date seeds were imported and sown in the warmer and less elevated portions of the District. The experiment has been successful so far—

KULU TAHSIL.

Statement No. V.—The quinquennial plan of operations sanctioned for Kulu is set forth in my letter No. 222 of May 21st, 1888, to your address. Previous to the date of that letter, the system followed had been to excuse certain zemindars in each kothi, from other begar, on condition of their planting and maintaining trees along certain portions of the road. The work of these zemindars was inspected from time to time, by a mali who was paid Rs. 10 per mensem from the arboricultural allotment and from other funds. The figures shown in column 3 of statement V show, I believe, the length of road it was proposed to plant in this manner. These figures have been furnished by the Tahsildar and Naib-Tahsildar, and it may be necessary to maintain them in order that the present statements may agree with those submitted in former years. Otherwise I would suggest that they should be amended, in accordance with paras. 3 and 4 of my letter above quoted, in which it is pointed out that the total length of road in the Sub-division (exclusive of Lahul and Spiti) suitable for avenues is 177 miles (Plach 82 : Kulu 95). A considerable portion of this length of road is naturally wooded, but it would be impossible, without laborious measurement to indicate the total length of such portion with accuracy. The entries at (1), (2) and (4) in column 4, show the length of road stocked under the old system, and at (3), the length stocked in 1888-89 in accordance with the quinquennial plan of operations. Column 5 shows the length of road—7 miles planted during the year in accordance with the plan of operations. The statement as submitted is based on the statements received from the Kulu and Plach Tahsils. I would prefer, however, to substitute for it, the statement which is prepared for the Sub-division, without regard to the tahsil boundaries.

Statement II.—The nurseries shown in this statement were planted in 1888-89 for the supply of trees for the 10 miles of road south of Dalashni on the Sultanpur Banjar road, in accordance with the quinquennial plan of operations, and there was no necessity to extend them during the year under report.

Statement VII.—In accordance with the plan of operations, two men are employed on Rs. 5 per mensem each, to plant and water trees along the ten miles of road to the south of Dalashni.

As contemplated in the plan of operations, the greater portion of this length of road has now been planted on one side of the road only. The period of two years assigned for the planting of this portion of the road has not yet expired, and it will probably be found necessary to extend it. This piece of road is the hottest, least shaded in Kulu, and it is important that the trees planted should not be left untended until they have attained a strong growth. The soil is poor, water is scarce, numerous flocks of goats pass along the road, and the hill side has been fired for two years in succession, retarding the progress of the planting operations. Considering these difficulties, I do not consider the progress of the work unsatisfactory, and if the result of these operations is to establish even a few trees only along this hot piece of road within three or four years from their commencement, it will be a matter for congratulation.

A number of fruit trees were received from the Mahasu orchards, and from the Lahore agricultural gardens at the end of 1889, and the beginning of 1890, and were distributed partly to native agriculturists, but chiefly to European planters. A few Negis have recently asked me for fruit trees, and such trees as are available in the tahsil gardens will be given to them at the proper season. In accordance with a suggestion made by the Director of Land Records and Agriculture, the propagation of the Spanish chestnut, from seed obtained from the trees in the Forest Department garden at Manali, is being attempted, with a view to the young trees being distributed among the zemindars of the Sub-division, but it is impossible to say at present how far the experiment will be successful.

REPORT BY PRESIDENT MUNICIPAL COMMITTEE, DHARMSALA.

The Dharmsala Municipality prepared and submitted a plan of Arboriculture operations for the five years 1888 to 1892, in accordance with Conservator of Forests, Punjab No. 394 $\frac{C.}{L}$, dated 18th January 1888. This plan was sanctioned by the Conservator of Forests, Punjab, in his No. 1921 of 17th December 1888.

In 1887-88, it was found necessary to plant a large number of trees of various kinds in the station and its neighbourhood which has been denuded by the extensive cutting of trees during past years. One consequence of the denudation was that landslips were of frequent occurrence. The Committee entertained an establishment at an annual cost of Rs. 375-0-0, and commenced laying out small plantations.

During the year 11,505 young trees were planted in 10 separate places, which were fenced in with thorns. Out of the above number 1,955 plants proved a faiure. Private individuals were induced by the offering of seedlings free of cost, to plant them within their compounds.

An area of 1·50 acres was sown with seeds of different kinds of trees, such as deodar, gum, khirik, pajja, punan and oie, &c. The work done this year was very satisfactory.

At the beginning of the year the plantations and nurseries at Dharmsala under the charge of District Board were transferred (together with their establishment) to the charge of the Municipality. Rupees 600 were laid out for their maintenance and extension of nurseries and plantations.

During the year 11,399 trees were planted out, mostly deodar, oak and gum. The deodar and oak planting proved very successful. House owners in Dharmsala made considerable plantings of deodar on their estates. The seedlings were supplied by the Municipality.

Those parts of the station which were bare, and where there were frequent landslips, have been planted with deodar, oaks and gums, each plant being fenced with thorns and wire; also seedlings of natural growth were protected as much as possible from grazing of cattle.

Return II.—The area shown as "given up or transferred to groves" in column 5, is the land occupied by nurseries from which seedlings were transplanted and shown in column 5 of Statement No. III. An area of 6 acres was sown successfully with seed.

The work done during the year was not very satisfactory. The sowings in the nurseries suffered from want of rain. The trees planted during the year numbered 6,489, as compared with 11,399 in the preceding year. The failures (column 6 of Statement III) are also due to the same cause—want of rain.

Statement IV.—Blank. No remarks called for.

Statement V.—Dharmsala being thickly wooded on both sides of the road, required little planting. There were, however, a few bare spots which were planted and fenced.

Statement VI.—The item of Rs. 109 is the income from the public gardens which are here returned as "ornamental garden", there being no income from arboriculture, strictly so-called.

Statement VII.—In column 3 Rs. 293 is the expenditure on the public gardens.

In column 5, Rs. 566 is the amount of expenditure incurred in maintenance and extension of the existing nurseries, plantations, &c.

LAHORE DIVISION.

Note by Commissioner.

Mooltan District.—The result of the three years working is poor. More money might be spent on arboriculture, and it would be well if one Extra Assistant Commissioner were specially put in charge.

Montgomery District.—Arboriculture can hardly be called a leading element in the Montgomery District Administration.

AMRITSAR DISTRICT.

General Remarks.—The year 1889-90 was unfavorable as regards the rainfall, the total amount being deficient as compared with that of 1888-89. The rainfall for 1887-88 was very scanty and much below the average. This, however, had no injurious effect on arboriculture.

General Avenues and Groves.—The subjoined statement shews the progress made in District Arboriculture during the past three years :—

Year.	Length of roads stocked with trees at beginning of each year.	Length of road planted during the year.	Length of roads failed during the year.	Length of roads stocked with trees at end of each year.
1887-88	136·32	13·11	22·59	126·84
1888-89	126·84	29·07	12·67	143·24
1889-90	143·24	16·53	13·71	146·06

From the above it will be seen that the total length of District roads stocked with trees have been increased from 136 miles at the end of 1886-87 to 146 miles at end of 1889-90. During the three years under report, 58 miles of roads were planted out, while failures or deaths have occurred on 48 miles. Within the Municipal limits of 66 miles of roads suitable for tree-planting 36·25 have been stocked. During the year 3 miles were planted out, making a total of 39·25.

Groves.—From statement IV, it will be seen that the area of groves has slightly decreased during the three years as compared with the figures at the beginning of 1887-88. There are no groves properly so called within Municipal limits belonging to the Municipality.

Detail of work done, Aveneus and Groves.—The following shows the progress made in tree-planting during three years under report:—

	No. of trees newly planted.	*Renewals to fill up gaps.*	*Total.*
1887-88	1,954	2,805	4,759
1888-89	7,896	3,784	11,680
1889-90	2,640	3,963	6,603
Total ...	12,490	10,552	23,042

Of the 23,042 trees planted, 3,260 or 14 per cent. died.

The undernoted road avenues were planted during the past three years:—

	Trees planted in 1887-88.	Trees planted in 1888-89.	Trees planted in 1889-90.	Total length in miles planted.
Atari-Ajnala road	400	475	...	2½
Sher Singhwala ,, ...	230	225	...	1½
Khasa Bhakna ,, ...	708	...	...	2½
Ajnala Ramdas ,, ...	206	...	...	¾
Taran Taran, Jundiala road	140	...	...	½
Ditto Vairowal ,, ...	50	...	...	...
Ditto Gharenda ,, ...	...	5196	500	18½
Ram Tirath-Khasa Station road	...	...	1,240	3½
Amritsar-Batala road	...	...	300	¾
Amritsar-Sialkot road	...	...	200	½
Harrike road	...	...	290	¾
Total	1,754	5,896	2,530	31¾

The above shows that most of the work was done on the Taran Taran-Gharenda road, and on the road between Ram Tirath and Railway Station, Khasa, and compares favorably with the operations of the previous triennial period in which 4,315 trees were newly planted against 10,380 of the three years under report.

The accompanying map shows the present state of road avenues in this District; the notes below the map explain all that is required.

Groves.—During the year 1888-89, 2,000 trees were planted on the Raja Tal Bridge, forming a grove of trees and are progressing favorably; and 110 trees were planted on encamping-grounds. On the Batala road an old abandoned grove consisting of about a rood of land was sown with kikar: trees have germinated and are now in a flourishing condition.

In 1889-90, the groves on the Sialkot road of 2 acres and that on Batala road of 1 rood of land were sown with kikar seeds in place of the old dry trees which had to be cut down and sold, and amount credited to District Fund. Two hundred trees consisting of mulberry, jaman, tun, pipal and bohar were planted at the Mehta Rest-house.

Government Gardens.—The Municipality maintains the Rambagh garden which is so widely known as not to require any description here. All provincial aid has been withdrawn since 1st April 1890, so that the whole of the cost of maintenance now falls on the Municipality. The Municipality has formed 2 parks near the city on land reclaimed from the city ditch, as pleasure and health resorts for the people. There are besides several gardens inside the city also maintained by the Municipality.

Nurseries.—The total number of nurseries in the District is the same as at the end of 1886-87, *viz.*, 6.

In addition to trees planted on roadsides in the District, 4,055 plants were given to the Executive Engineer, Public Works Department and to zemindars free of cost from the nurseries as noted below :—

	1887-88.	1888-89.	1889-90.
Executive Engineer ...	400	...	...
Zemindars ...	1,180	1,270	1,205

These consisted of—shisham 2,280, tun 70, katchnar 25, mangoe 450, jaman 210 pomegranate 840, loquats 10, limes 80 and peaches 90.

At the beginning of the period under report, the Municipal Committee maintained two nurseries, one, however, has been abandoned, and one remains in area = 7·77 of acres. One nursery supplemented by the parks and gardens is sufficient. A couple of thousand plants—mangoe, jaman, tun and shisham, were given away gratis during the past three years to private individuals.

Cattle trespass and lopping.—Cattle found trespassing on the roads and injuring trees are sent to the nearest pound. Persons injuring trees, if discovered, are prosecuted and punished by the Courts.

As usual, the same care was taken in lopping trees, as reported in the preceding triennial period, see remarks under head "income."

Fodder trees.—With regard to fodder trees, there are no remarks to offer: the subject was reported on in the last triennial report.

Financial.—The total District income during the three years was Rs. 5,936, a detail of which is given below :—

	1887-88.	1888-89.	1889-90.	*Total.*
From lopping and thinning	595	506	498	1,599
„ Dead trees	603	1,276	1,471	3,350
„ Fruits and vegetables	11	40	235	286
„ Grass	139	147	146	432
„ Miscellaneous	140	103	26	269
Total ...	1,488	2,072	2,376	5,936

The above shows that the income has steadily increased during the past three years, and this may be considered satisfactory.

The expenditure for the three years under report was as follows :—

	Rs.
1887-88	7,996
1888-89	7,955
1889-90	7,570
Total ...	23,521

or an average annual expenditure of Rs. 7,840.

The amount of work done for the expenditure incurred compares favourably with the results obtained in the preceding three years.

The income derived by the Municipality during the past two years was as follows :—

	Rs.	A.	P.
1888-89	4,937	6	3
1889-90	5,902	2	7

Chiefly from the ornamental gardens.—During the same period the expenditure amounted to Rs. 11,518-3-9 and Rs. 13,018-2-9, respectively. Here again the bulk of the expenditure was on ornamental gardens and parks, and this must be so in a large Municipality.

Work done by private persons and village communities.—In the District at Ramdas, Mahant Ram Parshad planted out a large number of trees, and in the Amritsar Municipality several fruit gardens were formed.

Cultivation of fruit trees and their distribution among villagers.—Under head "nurseries" will be found number of trees distributed to zemindars; they were fruit and shisham trees.

LAHORE DISTRICT.

Rainfall.—The following table shows the rainfall of the District in each of the past three years :—

District.	1887-88.	1888-89.	1889-80.
Lahore	20·4	16·4	15·98

The average fall during the past three years was 17·59, against an average of 21·64 as the record of past years. These three years were, therefore, years in which the rainfall was deficient.

Annexed is a table showing the rainfall in each of the four tahsils during the past three years.

Tahsil.	1887-88.	1888-89.	1889-90.
Lahore	20·4	16·4	15·98
Kasur	12·8	19·9	16·45
Chunian	5·5	12·4	15·54
Sharakpur	17·2	19·3	11·87

Calamities.—There was no drought or other calamity in any part of the District especially of affecting arboriculture, except fires in rakhs, which will no doubt be noticed in the reports upon arboricultural operation of the Forest Officer; nor have any complaints of white-ants having destroyed young or living plants been received.

The reports of all four Tahsildars on the condition of the avenues, groves and nurseries under their care are fairly satisfactory. Roadside avenue planting and tending roadside trees were the works on which the District arboricultural establishment was principally employed.

The formation of new nurseries and planting of roadside groves of shelter-giving trees has received, and is still receiving attention.

A map showing the extent to which the roads in the District have been stocked with trees, and the positions of nurseries and groves is enclosed.

Description of works.—Avenues.—During the past three years a total length of 75·5159 miles of avenue has been added to the roads in the District, the following kinds of trees being used: shisham, frash, kikar, pipal, sirish, tut, jaman. More shisham was planted than any of the other kinds.

This, however, does not include tree-planting operations within Municipal limits carried on by Municipalities, the operations of which have been shown separately.

The following is a detail of lengths added in each of the four tahsils:—

Tahsil.	1887-88 to 1889-90.	1884-85 to 1886-87.
	Miles.	Miles.
Lahore	12·629	13·0563
Kasur	10·429	1·1969
Chunian	20·394	5·5000
Sharakpur	32·000	10·9034

The amount of work done compares favourably with the results obtained in the preceding three years. The establishment in all four tahsils were also employed in filling up gaps in existing avenues, and tending and watering the young plants put down in the lengths added during the past three years. From the avenue progress statement, it will be seen that about 203·613 miles of the roads in the District yet remain to be planted with avenues.

Nurseries and Groves.—In tahsil Lahore new nurseries were planted at Hudiara and Faizpur during the year 1887-88. Four new groves measuring 4·25 acres were planted during the years 1887-88 and 1888-89 at the following places :—

Encamping-ground at Munawan	...	...	1·00 acre.
Do. do. at Kanah	...	...	1·00 „
Dâk Bungalow at Chung	...	...	1·00 „
Kalas Mari on Hariki road	...	...	1·25 „

In tahsil Kasur new nurseries were planted during the year 1887-88 at Bhura, Valtoha, Khalra, Bhope Rai, Tikarpura and Patti.

The plantings are reported to be flourishing.

A new grove measuring 2·976 acres was formed during the year 1887-88 and 1889-90, near the Luliani encamping-ground.

In tahsil Chunian new nurseries were formed during the year 1887-88, near Kot Radha Kishen, Bhama Chunian, and at the side of the Changa-Manga road. No new groves were planted during the past three years.

In tahsil Sharakpur a new nursery was planted during the year 1888-89, near the Sheikhupura road; but no new groves were formed during the past three years.

A total area of 2·6125 acres of nurseries was stocked during the past three years.

Cultivation of fruit trees by private persons.—In tahsil Lahore fruit trees were planted by the following persons :—

Darogah Abdul Rahim at Mouza Sagian Sandah.
Mian Nizam Din at Bagbanpur.
Moti Shah at Shahdera.
Shankar Shah at Shahdera.

In tahsil Chunian fruit trees have been planted by the following persons :—

Nihal Singh at Mohomedipur.
Buta Singh at Harchok.
Majhi, Lambardar, at Bungi Kalia.

Fruit trees were not extensively planted by private persons in the Kasur and Sharakpur tahsils during the year under report.

Establishment and supervision.—The Sub-Overseers at each of the tahsils Kasur, Chunian and Sharakpur and the Salotri at tahsil Lahore, supervised all planting operations in addition to performing their own duties.

The following is an abstract of the detailed statement of establishment employed and the cost during the past three years :—

Tahsil.	Establishment.			Cost.		
	1887-88.	1888-89.	1889-90.	1887-88.	1888-89.	1889-90.
				Rs.	Rs.	Rs.
Lahore	14 men	12 men	11 men	521	586	774
Chunian	6 „	6 „	11 „	270	355	1,143
Kasur	7 „	7 „	10 „	582	639	648
Sharakpur	7 „	6 „	8 „	369	431	440
Total ...	34 men	31 men	40 men	1,742	2,011	3,005

A reference to the detailed statement of expenditure will show that out of the totals of Rs. 3,717, 3,344 and 4,335 expended during the past three years, Rs. 1,742, 2,011 and 3,005, respectively, were paid for establishment.

Financial results.—In the following table the income and expenditure for the past three years are compared :—

Tahsil.	Income			Expenditure.		
	1887-88.	1888-89.	1889-90.	1887-88.	1888-89.	1889-90.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Lahore	156	204	862	1,036	1,039	1,547
Kasur	5	201	65	951	851	848
Chunian	211	335	183	341	414	1,143
Sharakpur	25	287	106,	1,389	1,040	797
Total ...	397	1,027	1,216	3,717	3,344	4,335

It will be seen that expenditure has exceeded income during each of the past three years by Rs. 3,320, 2,317 and 3,119, respectively.

Statements of arboricultural operations within the Municipality of Lahore, together with a memo. drawn up by the Secretary, are also submitted.

Note by the Secretary to the Municipal Committee.

It will be observed that, besides the gardens maintained from Municipal Funds, the only other operations conducted under the auspices of the Municipal Committee were confined to the filling of gaps in existing roadside avenues.

The following is a statement of the number of trees so planted during the three years ended 1889-90 :—

	Planted.		Grown.	Died.
1887-88	Frash	... 180	153	27
.....	Shisham	... 760	656	104
1888-89	Do.	... 729	569	160
1889-90	Do.	... 400	300	100
.....	Siris	... 225	175	50

The soil on some of the roads is exceedingly bad and water is scarce ; on these roads the frash tree thrives the best.

The decay and death of some of the finest of the siris trees in the station during the past two or three years, has been noticed with much concern. It will take years to replace them.

MOOLTAN DISTRICT.

Progress made on roadsides.—The progress made in arboriculture in the District during the last three years has not been very great. In fact beyond the establishment of three new nurseries, at Kukar Hatta on the Sidhnai Canal, at Makhdum Rashid at the tail of the Sidhnai Canal, and at the Am-Khas garden in Mooltan, practically nothing has been done. The returns show that 9 miles of road have been planted during the three years. The statistics, I fancy, are very doubtfully reliable. Against this has to be set off 4½ miles of failures or half the area planted. This seems a very large percentage, considering how little planting has been done, and is undoubtedly due to insufficient supervision. Of course there are great difficulties in the way of extending avenues in so arid a District as this, but still wherever canal water is available, trees grow extremely well, and better results ought to have been shown. The difficulty lies in supplying water to young trees during the six months that the canals are dry. A plan used to be in force by which a zemindar was told off to water from his well a certain number of trees, receiving a payment of two or three annas for every tree alive at the end of the year. This plan is still continued in the Mooltan Tahsil, but has not proved satisfactory elsewhere.

Establishment maintained for protecting and watering trees.—The establishment maintained for the protection of roadside trees, apart from that maintained by the Mooltan Municipality, is as follows :—

Tahsil Mooltan	...	3 malis, 1 bhisti.
„ Shujabad	...	1 mali, 1 „
„ Lodhran	...	3 malis, 1 „
„ Mailsi	...	2 „
„ Kabirwala	...	5 „

Total cost some Rs. 1,200 per annum.

Scheme for protecting roadside trees.—In 1884, Mr. O'Brien suggested a scheme for planting groves. Water being supplied during the hot weather from the existing inundation canals, and where necessary in the cold weather by sinking temporary kacha wells. The proposal seems never to have been acted on. What is wanted, however, is not so much groves as avenues of trees on the most frequented roads. Even more than to the want of a proper supply of water, the large amount of failures is to be attributed to insufficient fencing, and the consequent damage done by cattle and goats. A mud wall of 2 or 3 feet high round a young plant is of very little use, unless a fence of thorns is added at the top of it.

Ornamental gardens.—The Laughe Khan garden in Mooltan is a very fine one and is maintained chiefly at the cost of the Municipality of Mooltan. Some Egyptian date seed was received last year. A hundred plants have been raised and distributed to different gardens. Beyond this no experiments have been made. Something might perhaps be done in the direction of distributing the better kinds of limes, oranges, mangoes, peaches, and other fruit trees to wealthy men who take some pride in their gardens. A good mangoe garden is already a considerable source of profit, and probably might be made more so.

Map of the District.—A map showing the roads of the District is herewith forwarded as desired. The lateness of the submission of the present report and returns is largely due to delay in preparing this map, as there was no map of the District for which the roads could be taken, tahsil maps had to be utilized.

Where only a short length of road has been planted with trees, it has been impossible to show it on the map as the scale is too small.

JHANG DISTRICT.

General Remarks.—No triennial report was submitted from this District on the last occasion for the years 1884-85 to 1886-87; the reason for this was communicated by a telegram, dated 29th August 1887, to the Conservator of Forests which ran as follows :—

"Arboriculture failed from want of rain, hence no detailed report." Hence this is the first report submitted.

Rainfall.—The total rainfall in the year 1887-88 was 8·4 inches, and in the following years it ran down to 6·6 and 5·8 inches, respectively. The rainfall of the year 1889-90 has not been more than half the average rainfall of the past years, *viz.*, 10·93 inches. From this it is evident that the District Officers have experienced great difficulty in making the progress that has been made, as each tree wants careful and separate watering and daily cleansing from drifting sand to make it grow at all, and then the chances are that a hot wind comes and kills it just when it is most promising.

Nurseries.—There are three nurseries at the Sadr and one at Tahsil Shorkot for rearing trees, which supply almost all the trees required for transplanting. Self-sown seed are also utilized for transplanting. About 10,000 cuttings of trees of many descriptions are reported to have originally been successfully planted in each of the years under report, out of which nearly ¾ in the first year and about half in the second and only 500 in the third year survived; of those surviving the greater number were transplanted on the roadside. The area occupied in the year 1889-90 was smaller than the past two years; but the young trees were planted at nearer intervals, and many were used in filling up the gaps where trees had fallen, and replacing young trees which had died. With reference to column 5 of the year 1889-90, the greater number of trees were transplanted on the Chichawatni road, and occupied a mile in length on both sides of the road.

Plantations.—There is only one plantation in this District called "Chak Sahjowal" on the left bank of the river Jhelum. This plantation was formerly shewn in the return of groves, but is now put down in return No. III. It covers an area of 261·03 acres; ·03 acres failed in the year 1888-89, as this area of land was washed away by the river; no fresh area was stocked during the past three years.

Groves.—The total area under groves at the beginning of the year 1887-88 was 24·82 acres, and that planted during the years under report was 2·11 acres; failures amounted to ·37, thus leaving an area of 26·56 acres stocked with trees at the end of the year 1889-90.

One hundred grafted (Bombay and Malda), mango trees were purchased from the Government Botanical Gardens at Saharanpur and planted in the station garden. From the Lahore Government gardens a large number of fruit trees, such as Ægle marimelos (bael) almond (badam), falsa (Grevia asiatica), fig, guava, khirni (Mimusops), loquat (Eribotrya Japanica), mulberry black, mulbery China, orange Sylhet, lime, sweet, pommelo peach, China flat, peach large, noki country and plantain champa, were sent for and planted in the garden on a separate plot of ground prepared for the purpose. Four hundred and seventy four pots of shrubs and plants of different sorts were indented for, but the Superintendent, Government Gardens, Lahore, could supply only 219 pots. The greater number of these trees have died in spite of all efforts.

The area under the charge of the Municipality is small, and surrounds the Town Hall, school houses and the dispensaries. They have been stocked with young fruit trees which are still alive for the most part, and there is hope that some will survive.

Avenues.—The following tabular statement shews the progress made in avenues :—

Locality.	No. of trees planted.			No. of trees died.		
	1887-88.	1888-89.	1889-90.	1887-88.	1888-89.	1889-90.
Station roads	1,078	32	50	170	92	25
Jhang to Shahpur road	...	536	50	...	39	...
Road from Jhang to Kharora and Kharora to Mig hiana	150	...	10	8	...	...
Sadr to Khaki Shah and Khaki Shah to Kharora	650	650	5	25	633	3
Road from Jhang to junction of Chiniot road	...	...	10	...	...	5
Road from Sadr to Athara Hazari ...	979	100	80	369	6	32
,, Sadr to Lahore, *vid* Pacca Mari	...	200	98	...	19	9
,, Sadr to Toba Tek Singh ...	1,555	1,031	905	203	59	70
,, Jhang to Mighiana	165	80	...	...	13	...
,, Police lines to Horse Show ground and from Horse Show ground to road leading to Pacca Mari	90	...	170	26	...	9
Portion of road crossing Tahsil compound	38	20	8	10	10	6
Road from Khiva to the boundary of Gujranwala	230	6	8	37	...	6
Road from Dispensary to Tahsil	48	6	4	5	2	1
,, Tahsil to Chiniot Ferry ...	311	...	...	40	32	...
,, Bank of river to Ahmedpur ...	360	...	...	40	35	...
,, Bagri to the boundary of Mooltan	...	34	40	...	21	26
,, Ahmedpur to Mud Mapal ...	...	25	37	...	16	10
,, Shorkot to Kamalia ...	20	12	7	8	12	3
Total ...	5,674	2,732	1,482	941	989	205

Nine thousand, eight hundred and eighty-eight trees were planted during the three years under report, out of which 2,135 died and 7,753 are comparatively speaking, flourishing. These are being closely supervised as any want of attention now means that $\frac{9}{10}$ would die. Shisham trees were procured from Lahore to the number of 2,000 and planted on roads at Sadr and Tahsils.

Income and expenditure.—The following table shews the financial results of the arboriculture operations of the Jhang District :—

Year.	Income.	Expenditure.	Difference.	
			Surplus.	Deficit.
1887-88 ...	1,548	4,856	...	3,308
1888-89 ...	1,442	5,242	...	3,800
1889-90 ...	1,659	5,176	...	3,517
Total ...	4,649	15,274	...	10,625

The income consists of sale proceeds of dead trees, grass and fruit, &c. It is evident that a very large amount of money is spent year by year on arboriculture which is compensated by a small income, but for the residents of Jhang the money is well spent, both in ameliorating the climate and lessening the dust storms.

Besides the regular establishment, *viz* :—

Station Garden Establishment.	*Arboricultural Establishment.*
1 Head Mali.	1 Jamadar.
20 Malies and Coolis.	5 Malis.

There are 29 Bhistis steadily employed for watering trees on roadsides, with a Chaprasi to supervise them. From 75 to 100 trees are assigned to each man who waters them in the morning and evening every day, and with all these efforts the results are fair; moreover there are two pairs of bullocks employed at intervals on 6 wells for watering trees on the road from Jhang to Chichawatni. An old well on this road was also put into working order in the year 1887-88, and it waters about 900 trees. Endeavours are being made to utilize the wells in preference to Bhistis, and a scheme for this is being made out.

Map.—As directed in para. 11 of the instructions of the Conservator of Forests, a map indicating old and new growth by different colours accompanies this report: this map has been prepared by the help of the skeleton map supplied by the Director of Land Records, but is not sufficiently large to be of much use.

Gardens of private persons.—Private persons are in possession of small gardens and orchards on the river banks which produce fruits of the kinds of mangoes and pomegranates, but their produce is not sufficient to supply the wants of the District. Groves of date palm trees exist in some villages of a superior sort, and supply good fruit which is sometimes sent as curiosities to other Districts in the Punjab.

The amount of Rs. 259 was expended in watering trees at wells at various places, more especially at thanas and Rest-houses. Cultivators are also impressed with the importance and benefit to themselves of tree-planting, and in many places, especially round Jhang, there are nice young plantations on the different wells, and trees are put in by the District Officers wherever there is any chance of their growing. If the canal comes here, the difficulty of getting trees will be ended, but meantime it is a great struggle though fairly successful.

MONTGOMERY DISTRICT.

1. *Rainfall.*—The following table shows the rainfall of the three years under report, as compared with the average calculated on the last five years :—

Year.	Rainfall of year.	Average of previous five years.
1887-88	9·4	8·7
1888-89	6·6	7·8
1889-90	7·8	7·8
Or average of three years ...	7·9	8·1

which is less than the average, and is not sufficient for arboricultural operations.

Nurseries.—No special areas were set a part for nurseries, but small plots in gardens were kept stocked with cuttings and young plants for the purpose of replacing dead trees on roads, &c.

Plantations—Nil.

Groves.—Total area of groves existing in this District at the end of the year under report was 746 acres, against 31 acres in the preceding year. The difference is due to the correction of previous returns.

No area was planted or transferred from nurseries during the three years under report.

The existing groves consist of old and large trees, and require no particular care.

The kinds of trees planted are generally kikar, ber and shisham.

Avenues.—The avenues planted during the three years under report are as follows:—

In 1887-88	...	...	...	Nil.
„ 1888-89	...	...	...	2 miles on roadsides.
„ 1889-90	...	...	...	16 miles on Degh canal.

Thus total length of avenues planted during the years under report is 18 miles.

Ninety-seven decimal eighty-five miles of avenues shown in addition in the 3rd column of the statement were omitted to be shown by an error in the last years' statements, so the correct length planted during the three years is 115·85 miles.

The work done during the years under report consisted also of replacing dead trees with fresh ones wherever required, and protecting young and delicate trees from frost by covering them with grass during the very cold months.

About half of the trees planted out during past three years lived.

A large portion of the roads in this District remain unplanted, owing to bad soil and to scarcity of water along the roadsides. Whiteants are very destructive here and do a great deal of damage to young plants.

Income.—The income derived from arboriculture during the years under report was as follows:—

In 1887-88	...	...	...	...	Rs. 808
In 1888-89	...	...	...	...	„ 843
In 1889-90	...	...	...	...	„ 1,399.

The increase in income during 1889-90 is chiefly due to an item of Rs. 500 on account of contribution paid by the Montgomery Municipal Committee for the purchase of pumping Engine.

Expenditure.—The expenditure incurred on arboriculture during the years under report was as below:—

Years.	Gardens.	Groves and avenues.	Total.
1887-88	... 2,785	1,030	3,815
1888-89	... 1,866	761	2,627
1889-90	... 2,632	472	3,104

Only Rs. 121 were expended in 1888-89 on extension of avenues, and the rest Rs. 2,006 on the maintenance and repairs of existing gardens, groves and avenues.

The amounts shown against 1887-88 and 1889-90 were wholly expended on maintenance and repairs of existing gardens, groves and avenues.

The working was generally supervised by the Deputy Commissioners and Tahsildars.

A map of the District is herewith submitted.

GURDASPUR DISTRICT.

General Remarks.

Rainfall.—The rainfall during the winter months of 1889-90 was scanty, but in all other seasons of the past three years it was copious.

Nurseries.—The area under nurseries at the beginning of 1887-88 was 5·837 acres, while the area planted during the past three years was 2·825, and the area from which trees were transferred to roadside avenues and plantations amounted to 2·805. The nurseries are now stocked with grown up trees, and it will be possible to carry on operations in future years on an extensive scale.

Fences.—Fences are made of cactus where it is procurable, or of thorny branches of kikar or phulai trees and sometimes of shisham branches when thorny trees are not available. The enclosure is generally made four feet in diameter and constitutes the most economical fencing and answers the purpose of protecting the trees well when kept in repair.

Watering.—The plants are watered by tree care-takers or bhishtis, each man being put in charge of about 300 trees. An experiment was made of watering trees with earthen *gharras* buried at the root of trees, but the plan did not succeed on District roads.

Species of trees planted.—Only large fruit and timber trees, such as mango, jaman, mawa (*Bassia latifolia*) and shisham are now planted in this District. A supply of superior kind of country mangoes was obtained in 1886-87 from the Saharanpur botanical gardens and sown in the Government garden nurseries. These were all planted out on the station roads during the past three years.

Description of work.—The following comparative table will show the amount of work done during the past three years:—

Year.	Length of roads planted during the years. Miles and decimals.	Length of road which have failed during the years. Miles and decimals.
1887-88 ...	17·19	·90
1888-89 ...	5·57	1·23
1889-90 ...	16·21	2·11

It will be seen that a considerable amount of work was performed during the years 1887-88 and 1889-90. Besides filling up the gaps on existing roadside avenues a large number of grafted mangoes were put in in the Government gardens, as also other fruit trees.

Extra gangs of Bhishtis were employed during planting seasons, *viz.*, in February and March, and July and August, and the arboricultural operations were carried on with vigour during those months.

Nurseries of fruit trees were opened in the Government garden and the trees sold to zemindars at a nominal price.

Establishment and supervision.—The following is a detail of the fixed arboricutural establishment during the past years.

	Rs.	Rs.
1 Daroga of arboriculture on 50 a month		600
Sadr Station.		
1 Jemadar, @ Rs. 8	96	
6 Malis @ Rs. 5	360	
		456
Gurdaspur Tahsil.		
2 Jemadars @ Rs. 8 and 7	180	
28 Malis @ Rs. 5	1,680	
		1,860
Batala Tahsil.		
1 Jemadar @ Rs. 10	120	
12 Malis @ Rs. 5	720	
		840
Pathankot Tahsil.		
1 Jemadar @ Rs. 9	96	
13 Malis @ Rs. 5	780	
		876
Shakargarh Tahsil.		
1 Jemadar @ Rs. 8	96	
14 Malis @ Rs. 5	840	
		936
Nursery establishment		462
Total ...		6,030

The services of the arboricultural Daroga were dispensed with in October 1889, as it was considered unnecessary to have such a highly paid official and the work was placed under the supervision of the Tahsil establishment.

Financial Results.—The income during the past three years has been as follows:—

	1887-88.	1888-89.	1889-90.
Ornamental gardens	581	429	602
Nurseries	161	269	242
Plantations ...	...	...	...
Groves and avenues	3,312	1,648	3,598
Total ...	4,054	2,346	4,442

RAWALPINDI DIVISION.

Note by Commissioner and Superintendent.

Shahpur.—The progress made in arboriculture is fairly satisfactory. The length of roads suitable for avenues is reported to be fully stocked with trees.

Sialkot.—The results reported are very satisfactory. The District has shewn a commendable activity in planting avenues, where necessary, and the arboricultural operations are conducted in accordance with a systematic plan.

Rawalpindi.—The District does not show a good addition. The length of roads suitable for avenues is 987 miles, while the length planted with trees is 336 miles only. The Deputy Commissioner reports that out of 31,923 trees planted, 25,148 failed. The want of water is the cause.

Jhelum.—The results shown in the returns are not altogether satisfactory. The length of roads planted with 13,988 trees during the three years, was only 41 miles. The Deputy Commissioner has not noted references on the map. Here, as in Rawalpindi, the want of water is against success. In both Districts the only good work was done by early Deputy Commissioners and Tahsildars.

Gujranwala District.—The matter of arboriculture seems to have been much neglected of late in this District, and great deal of apathy has been shown both by the District authorities and the Local Bodies. A good deal of money has been spent with very small results. The financial returns shown in the statements do not compare favorably with the expenditure, which is perhaps partly due to the want of a systematic plan; but I am glad to see that the present Deputy Commissioner takes much interest in the subject, and hopes to show better results in future years.

Gujrat.—This report is a brief one, and considering that Captain Davies has not had charge of the District during the periods for which the report is submitted, a full and complete report could not, under the circumstances, be expected.

The operations of the years under report were chiefly confined to the maintenance of roadside trees planted in previous years. Only 13½ miles of avenues were newly planted, and I presume no steps have yet been taken to encourage the cultivation of fruit trees. As regards the financial result, it was, I should say, a distinct gain to the District Board. As I have already stated in one of the reports, we owe it to the early Deputy Commissioners and Tahsildars that Gujrat is well provided with roadside avenues of grown trees, and that income from loppings and thinnings of old avenues nearly equals the expenditure on arboriculture in several Districts of the Division.

SHAHPUR DISTRICT.

Rainfall.—The rainfall of the year under report was much less than that of the previous year being 8·53, against 10·9, and comparatively little could be done to extend the area under trees.

Nurseries.—A very small addition has been made under nurseries. 7,648 plants were distributed gratis to the zemindars of several villages in this Tahsil, and 1,000 mangoes sold to them at 1 and 2 annas each. Greater improvement could be effected if Lambardars and cultivators were taught the method of reproducing, manuring, protecting and rearing of plants and fruit trees generally. The Civil Surgeon, Dr. Moher, who assists in the charge of arboriculture operations of this District has, under consideration, a method for teaching such details, and it is hoped that he will be able to find time to perfect his system which is first to instruct the gardeners thoroughly, and to spread such knowledge by means of a local native newspaper throughout the whole District. By such means it is hoped to get the people to take real interest in the rearing of plants and fruit trees. Many of the people are beginning already to display intelligence, and some have showed interest and many are availing themselves of the offer of plants from the nurseries at the Sadr Station. On the whole it is considered that with the successful planting and rearing of fruit trees, it will not be long before they begin to realize the advantage of having such gardens with an abundance of wholesome fruit trees during the summer months especially when fruit is really needed.

Avenues.—A number of new roads have been brought under arboricultural operations this year, and the new lines planted out aggregate 58 miles, against which 5 miles of failure are recorded, and the total length of avenues on roads and canals is now 433 miles. Besides kikar and other common trees, a large number of mangoes and plantains have been planted out.

Groves.—No addition has been made to the area under groves, but new trees such as mangoes, palms and other fruit trees were planted instead of the dead trees removed this year.

Plantation.—There are no plantations in this District.

Income.—The total income from all sources was Rs. 5,432, aganist Rs. 4,752. The increase is chiefly due to the proceeds from lopping and thinning of branches and removal of dead trees; the whole income was credited to District Funds.

Expenditure.—Expenditure shows a falling-off from Rs. 4,798 to 4,470. The decrease being due to the removal of a temporary establishment entertained last year for the extension of avenues and groves.

The result of the year's operations are very satisfactory when it is considered that during the year 9,000 young trees were planted and only 1,000 failed; efforts are now being made especially to extend the planting of fruit trees.

The following establishment is maintained for the avenues and nurseries in this District:—

	Civil Station Gardens.		
1	Mali	@ Rs.	12
2	do.	„	10
1	do.	„	7
2	do.	„	6
2	do.	„	5
9	Coolies	„	5
1	do.	„	2-8
	In Tahsils.		
1	Assistant Darogha	„	10
1	Mali	„	8
3	do.	„	7
2	do.	„	6
1	do.	„	5
1	do.	„	4
3	Coolies	„	5
1	do.	„	4-8
	Maintenance of roadside trees.		
1	Beldar	„	6
2	do.	„	5-8
13	do.	„	5
	Supervision.		
1	Darogha	„	34

The Darogha supervises all the operations of arboriculture of the District.

Separate statements are submitted for the Kalra Estate under the Court of Wards. Above 20 acres have been added to the area under groves this year, chiefly planted with palm to which must be added five gardens of mangoes, plantains, orange, grapes and other fruit trees. These operations have also been on the whole very successful. About 2,908 trees have been planted during the year, out of which 106 died out.

Sakesar.—The progress in afforesting the Sakesar hill top has not been quite satisfactory, owing to the scarcity of rain. "Chil" the surviving trees of last year were watered by means of *pakhals* and the water had to be carried from a great distance up-hill. They now appear, however, in a fair condition to establish themselves. About 400 plants of willow and peach have been planted during the year.

A map of the Shahpur District is attached, showing the extent to which the roads in the District have been stocked with trees. Old and new growth have been indicated by different colours. Thanks are due to Dr. Moher for the interest which he has taken in this subject.

SIALKOT DISTRICT.

Note by the Deputy Commissioner.

The explanation given in the last column of Statements Nos. II, IV and V will show that the reduced area under nurseries and groves, and the reduced length of avenues is owing to the more accurate classification of the figures. Originally the whole area under the public garden at Sialkot used to be shown as a nursery, whereas only a small portion is an actual nursery for young trees. In like manner a large area where the Gulu Shah fair is held, was surrounded by young trees, and this was before classed as a grove. There is no such thing as a real grove of trees there. Moreover, it was the custom before for the lines of trees on each side of a road to be counted separately.

As a fact, there has been no real falling-off in the maintenance of old avenues; and though the length newly planted does not appear very much, a good deal of attention has been paid to filling up gaps in existing avenues, and there are hardly any roads now which have not good lines of trees on each side of them. The District is distinctly well supplied with good avenues, and the profit made by the sale of wood is considerable. The District is very thickly populated, the farmers' holdings are small, and there are not many village groves. The consequence is that when sales of roadside wood takes place, there is always a keen competition to buy it for house building, agricultural implements, or for wells.

In the southern and south-western parts of the District, the only tree that grows well is the kikar (*Accacia arabica*). Though it does not give a particularly good shade it always fetches a very good price when sold.

There are a few very broad roads in the District, as much as 80 or 100 feet in width. Some of them are not so much used as several of the narrower roads. On two of

these the District Board is about to try a plan suggested by the Deputy Commissioner. This is to keep up only some 40 feet of road, and to plant trees on each side of this width. As soon as these trees have well grown, it is proposed that the outer line of trees be cut down by degrees, thus relieving the neighbouring fields of the injury caused them by the shade; in place of them small masonry pillars could be put up to prevent encroachments.

The supervision of the arboriculture has now been entrusted to the District Engineer who works through the several Local Boards. Each Local Board has a Sub-Overseer for Public Works. He is also responsible for the arboriculture of his Tahsil, and has under him a Muharrir on Rs. 10, who attends more especially to the auctions of roadside wood. There is also an establishment of malis and bhistis in each Tahsil.

The total income from arboriculture during the last year was Rs. 14,163, the expenditure being Rs. 11,245. If we exclude the ornamental gardens which are not remunerative, the net income from arboriculture was Rs. 3,902.

Report by Secretary, District Boards.

Rainfall return.—The rainfall return No. I has been carefully prepared from the statistics given in the Agricultural Prospects Reports; a note in the column of remarks explains how the average for the whole District have been arrived at.

Arboriculture as effected by rainfall.—The rainfall during the last three years has been much below the average of past years, especially that of 1889-90. It was not only insufficient but unseasonable, and consequently unfavorable for arboricultural operations generally. It has rendered the task of keeping young plants alive by means of artificial irrigation more laborious and expensive.

Number of nurseries maintained.—There are in all 18 nurseries in the District for supplying roadside trees. Some of them are kept up wholly at the expense of the District Fund, others are maintained by zemindars at their wells, to whom certain half-yearly payments are made in return for the trees supplied.

Failure of nursery wells.—Owing to the inadequate rainfall already remarked on, many of the wells at the nurseries failed to supply sufficient water, thus greatly retarding the extension and improvement of the nurseries.

Encouragement of private nurseries.—The system of encouraging zemindars to raise small nurseries at their wells by the payment of annual subsidies has worked satisfactorily, and it is hoped that by steadily working on these lines, a considerable saving in the up-keep of nurseries may be looked for.

Cantonment Garden nursery.—In the nursery in the Cantonment gardens besides the usual roadside trees, attention is paid to the propagation of fruit trees of all kinds for sale and distribution in the District.

Groves.—There are very few groves in the District belonging to the District Board. There are of course clumps of trees at several of the Government buildings which, however, can hardly be classed as groves. Many of these were planted years ago and are affording shade and comfort, whilst others are of more recent growth

Avenues—Arboricultural scheme.—During 1888-89, an arboricultural scheme for five years was prepared and received the approval of the Conservator of Forests, by which in addition to the maintenance of existing avenues, certain roads or portion of roads in each Tahsil were to be taken in hand each year, and when fully planted out and the trees were past caring for, other roads were to be similarly treated. This scheme has on the whole been adhered to, and successful work has been done on the following roads which were taken up in 1888-89, and after this year will no longer require attention. This will enable the District Board to take up the other roads named in the scheme—

Sialkot.—Kulluwal and Jammu roads.

Pasrur.—Kila Sobha Sing, Kalalwala, and part of Amritsar roads.

Daska.—Randhir Bambanwala and Daska-Wazirabad roads.

Zafarwal.—Gurdaspur road.

Raya.—Part of Dode-Lahore road, and Narowal-Kila Sobha Singh road.

Nature of work done during the past three years.—During the past three years the work on avenues has been chiefly confined to filling up gaps in existing lines, and only a few miles of entirely new lengths of roads were planted with trees. This is clearly stated in the column of remarks of statement No. V, to which attention is invited. A reference to the map accompanying will show that the roads in the District are already fairly wooded with the exception of gaps which need filling up.

Fencing of trees.—The fencing for trees adopted in this District consists of cactus, and ditch and mound surmounted by thorns, being the most economical and practicable.

Species of trees planted.—The species of trees now planted are chiefly sissu and mulberry, and where these will not thrive, kikar. A few mango and jaman have been planted where there was a probability of success.

Damage to trees.—Much damage is constantly perpetrated to roadside trees by shepherds and villagers, who ruthlessly lop off branches for their animals to feed upon; and very often young plants are uprooted to prevent their growing up, and eventually injuring

crops by casting shade upon them. Whenever it was possible, the delinquents were prosecuted and punished.

District Canals and Bunds.—The District Irrigation Canal from the Degh to the village of Arki, as well as the bund at the Satrah Chumb, have been planted out this year with forest and fruit trees.

Planting done by Municipalities.—The Municipal Committees of Sialkot and Pasrur have undertaken the planting of trees on the roads skirting and leading into their towns. An attempt has also been made of planting the plateau in the Sialkot Fort with mango trees, which, if successful, will become ornamental as well as remunerative in a few years. In other Municipalities arboriculture work cannot be undertaken for want of funds.

Work done by private persons and village communities.—During the last few years the interest taken by private persons in Horticulture and by village communities in planting groves of timber producing trees, has been very great. Gardens has been planted by well-to-do persons at almost every large village in the District, and small plantations of shishum, mulberry, bukain or kikar may be noticed in almost every village. Every facility has been afforded to the people for obtaining fruit trees from the District garden nurseries, either at reduced prices or free of cost. Grafted mangoes and Malta orange plants have been much sought after. Another matter which has attracted the attention of market gardeners and others is the superiority of certain English vegetables over the country varieties, and frequent applications have been made for turnip, carrot, califlower, cabbage and pea seeds which have been complied with, as far as possible.

Income from arboriculture.—The income from arboriculture which comprises the receipts from gardens, the sale of dead trees on roadsides, loppings and grass, rose from Rs. 12,338 in 1887-88 to Rs. 17,758 in 1888-89, and again fell to Rs. 14,163 in 1889-90. The large income realized in 1888-89, was due in a great measure to destruction of tree by unusual storms.

Expenditure.—The expenditure on gardens was reduced during the latter half of the past year, and shows a decrease of Rs. 731 as compared with 1888-89. The expenditure on nurseries and roadside avenues has been only Rs. 7 less than in the preceding year, *viz.*, Rs. 7,614 against 7,621.

Supervising establishment.—From the 1st November 1889, the services of the "Daroga" on Rs. 50 and the 5 Rangers on Rs. 15 each a month were dispensed with, and the supervision of the arboriculture of the District was placed directly under the District Engineer and of each Tahsil under the respective Sub-Overseers who were granted horse allowances of Rs. 10 each for the extra duties thus imposed upon them, acting under the orders of the District Engineer, with Moharars on Rs. 10 each, to help the min the sale of wood and supervision of tree-planting operations. The sale of dead trees and loppings, however, was left entirely under the Presidents of Local Boards as before.

Financial results.—The following is a comparative statement of the Income and Expenditure during the last three years :—

Year.	Income from gardens.	Income from sale of roadside trees and loppings.	Total.	Expenditure on gardens.	Expenditure on arboriculture.	Total.	Surplus.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1887-88 ...	2,066	10,272	12,338	3,780	6,031	9,811	2,196
1888-89 ...	2,068	15,690	17,758	4,365	7,621	11,986	5,772
1889-90 ...	2,647	11,516	14,163	3,631	7,614	11,245	2,918

RAWALPINDI DISTRICT.

Rainfall.—The rainfull during the last three years in the different Tahsils is shown in the subjoined table :—

	1887-88.	1888-89.	1889-90.
Tahsils.	*Inches.*	*Inches.*	*Inches.*
Rawalpindi	... 32·1	... 37·7	... 29·2
Attock	... 14·1	... 19·4	... 18·3
Kahuta	... 28·5	... 33·8	... 33·5
Pindigheb	... 11·8	... 20·8	... 13·3
Gujar Khan	... 25·5	... 26·7	... 20·9
Fatehjang	... 18·6	... 26·6	... 20·3

In order that the rainfall during the period under report may be compared with that reported on in 1887, a table showing the average rainfall during both periods is given below :—

Tahsils.	*Average* 1884-87. *Inches.*	*Rainfall* 1887-90. *Inches.*
Rawalpindi ...	... 29·5	... 33·0
Attock ...	... 17·2	... 17·2
Kahuta ...	... 36·5	... 31·9
Pindigheb ...	... 13·7	... 15·3
Gujar Khan ...	... 21·8	... 24·3
Fatteh jang ...	... 21·4	... 21·8

From this it will be seen that the rainfall during the latter period as in the former has been insufficient in the Attock, Pindigheb and Fatteh jang Tahsils.

Nurseries.—The area set apart for nurseries in 21·76 acres of which 10·15 acres were stocked with trees or established plants at the end of the year 1888-89. During the last year of the period under report, 3·65 acres of the ground set apart for nurseries in the Attock and Kahuta Tahsils were sown or planted, but on 3·53 acres cultivation failed on account of want of rain. The small area (·12 acres) successfully planted at Hassan Abdal lies near a permanent stream of water.

Decimal fifty-four acres of ground was successfully stocked with mulberry trees by the Rawalpindi Municipality during last year.

The nurseries of forest and other trees, such as shisham, bakain, lut and phulai are intended for roadsides and groves. During the period 1887 to 1890, four new nurseries were established.

Plantations.—As no afforestation operations are in progress in this District, statement No. III has been left blank in accordance with para. 5 (5) of the instructions for the preparation of annual statements.

Groves.—The area set apart for groves in this District is 395·58 acres. Of this area, 357·63 acres had, at the end of the year 1888-89, been stocked with trees or plants, such as shisham, phulai, kikar and bakain. During last year, ·42 acres were successfully planted. The subjoined details show the manner in which this area is made up :—

Dispensary at Gujar Khan	...	... ·19 acres.
Encamping-ground and Dispensary at Hassan Abdal	...	... ·11 „
Tahsil at Kahuta	...	... ·12 „
	Total	... ·42 „

The Rawalpindi Municipality had stocked 20·33 acres of land with plants or trees; but as the arboricultural operations of Municipalities have not been shown in return for the previous year, the whole area has been entered in column No. 3 of return No. IV, in accordance with note (*b*) on that statement. Of the 20·33 acres mentioned, ·40 acres failed during the year. During the period under report, 254 new groves were acquired from zemindars and other private individuals at a cost of Rs. 1,550-3-5.

Avenues on roadsides.—In this District there are 987·97 miles of roads suitable for avenues. Of this length 336·47 miles had been fully stocked with trees or plants reported alive at the end of the year 1889-90.

Avenues planted by Municipalities.—The arboricultural operations of Municipalities not having been shown in the return of the previous year, it was necessary in compliance with the instructions given in note (*b*) of the statement, to make up the entry for column No. 4 thus :—

Length of roads fully stocked with trees or plants alive at the end of	*Miles.*
the year 1888-89	8·69
„ planted during the year 1889-90	0·86
Total	9·55

leaving column No. 3 blank to correspond with No. 6 of the previous year.

Of the ·86 miles of road planted by the several Municipalities during the year under report, ·17 miles failed. Of the roads belonging to Rawalpindi Municipality, five have been

planted with double lines of trees on each side. The subjoined details shows the names and lengths of these roads :—

Serial No.	*Name of Road.*	*Length in miles and decimals.*
1 ...	Public Gardens road ...	0·72
2 ...	Kutcherry „ ...	0·62
3 ...	Mission School „ ...	0·56
4 ...	Hammamwali „ ...	0·10
5 ...	Circular „ ...	0·81
	Total ...	2·81

Progress in the three years 1887 *to* 1890.—The number of miles of road on which operations were reported as carried out in each Tahsil was as noted below :—

Tahsils.	*No. of Miles.* 1887-88.	1888-89.	1889-90.
Rawalpindi ...	2·57	1·86	6·69
Attock	5·18	1·70	4·78
Kahuta ...	4·78	13·33	9·18
Pindigheb ...	0·47	...	1·00
Gujar Khan ...	4·66	10·31	9·23
Fatehjang ...	0·18	0·99	0·00
Total ...	17·84	28·19	30·88

Arboricultural operations are not carried on in the Murree Tahsil owing to the natural forest growth and the mountainous nature of the country.

Number of trees planted.—In the District 31,923 trees were planted, of which 25,148 failed, and only 6,775 were established. The number of trees reported to have been planted in each Tahsil is given in the subjoined table :—

Tahsil.	1887-88.			1888-89.			1889-90.			Total.			Percentage of trees established.
	Planted.	Failed.	Established.	Planted.	Failed.	Established.	Planted.	Failed.	Established.	Planted.	Failed.	Established.	
Rawalpindi ...	1,381	807	574	466	451	15	3,000	3,000	...	4,847	4,258	589	12
Attock ...	1,344	714	630	475	30	445	5,860	4,591	1,269	7,679	5,335	2,344	31
Kahuta ...	1,035	530	505	3,519	1,646	1,873	4,058	3,764	294	8,612	5,940	2,672	31
Pindigheb ...	500	300	200	...	...	...	528	129	399	1,028	429	599	58
Gujar Khan ...	1,970	1,903	67	3,630	3,430	200	3,692	3,572	120	9,292	8,905	387	4
Fatehjang ...	305	121	184	160	160	...	...	...	...	465	281	184	39
Total ...	6,535	4,375	2,160	8,250	5,717	2,533	1,7138	15,056	2,082	3,1923	25,148	6,775	...

Result.—The progress made in successful tree-planting in the District during the past three years may be described as being practically *nil*, and it is a matter of regret that this is not the worst that can be said in the matter. Many of the old avenues have been shamefully destroyed. On a late tour it was noticed that on some roads fully one-third of the trees had been entirely removed, and half of the remainder were ringed a little above the roots and were doomed. This was found to be particularly the case on the roads from Chauntra *viâ* Jatti to Gujar Khan, from Gujar Khan to Kallar, and from Kallar to Mandra. In a few places attempts have been made to fill up gaps, but on no single road in the District has it been found that young trees are properly looked after: those that have been planted represent wasted labor and money.

The people use every method they can think of for damaging trees on the ground that they throw shade over their lands, and they have been successful in destroying an immense number, many of them fine full grown shisham.

As a rule, trees have been planted outside the limits of the road. When the trees were small, and the people could be prevented from damaging by practical District arrangements, apparently no difficulty was experienced. But land has now increased in value; a certain amount is undoubtedly occupied by the roadside trees, and as revenue has been assessed on such land, the people are anxious to make the best they can of it. They have an undoubted grievance in some instances, but a good deal of damage is due to fanatical mischief. The matter is one requiring careful attention and a firm hand, but it

will take years to repair the damage already done. The roads are all wide enough for trees to be planted within the road limits, and in present operations trees will be planted within those limits. This will remove a legal difficulty in dealing with the matter. Another difficulty exists in regard to roadside groves. For the most part those in the District were established by Colonel Cracroft, as Deputy Commissioner. No objection at the time was made to the occupation of the land, which is in most cases of very small value. Compensation has been paid for some. The owners of others refuse to take any compensation, but threaten to sue Government if the land is not released. To dispose of the matter I have directed reports in such cases to be made for the land on which the groves stand to be taken up by the Land Acquisition Act, and this is necessary to save the groves. If one or two are so taken up the trouble will probably cease.

Arboricultural scheme.—At a special meeting of the District Board held on the 23rd October 1889, a scheme drawn up and reported on in accordance with the orders contained in para. 15 of letter No. 3358, dated 12th October 1887, from the Junior Secretary to Government, to the address of the Senior Secretary to the Financial Commissioner, was discussed, and a resolution was passed that the existing arrangements for the planting of trees in the District should continue, and that the question of purchasing strips of land on the sides of roads on which existing avenues stand, or of forming new avenues on other roads should be postponed for further consideration, when it had been decided on which road land should be first purchased in the Rawalpindi, Gujar Khan and Kahuta Tahsils, and the compensation payable had been ascertained.

Modification in scheme.—This resolution was cancelled at a meeting held on the 15th of March 1890, and it was resolved that arrangements should be made to form plantations within road limits, in order to obviate the necessity of further expenditure in taking up land beyond road limits; that with a view to this, the construction of wells at suitable distances on roadsides should be sanctioned, from which the young trees could be watered; that "malis" should be engaged for planting; that when the trees had grown sufficiently, the same and the wells should be made over to zemindars on condition that they look after the trees, and that the Tahsildars be requested to mark the limits of roads according to village plans. Action has been taken in the matter of requesting the Tahsildars to mark clearly the limits of the several District roads, and to fix upon suitable sites for roadside wells.

Gardens.—The six public gardens at Rawalpindi, Chuttar (on the Rawalpindi Murree road), Hassan Abdal, Fattehjang, Pindigheb and Gujar Khan continue to be maintained for the propagation of fruit trees and flowers. In the gardens at Hassan Abdal, Gujar Khan, Pindigheb, Fattehjang and in the Rawalpindi park fruit and other trees were planted to the number of 2,546.

During the period under report, 7,647 fruit trees were taken from these gardens and distributed among zemindars and private individuals in the District.

Fruit trees.—During the year 1889-90, the nursery for European fruit trees formed at Charra Pani on the Rawalpindi and Murree road for the Murree and Kahuta Tahsil was made to yield good results. Saplings to the extent of 2,245 were taken from it and distributed among Zamindars. In all 4,420 fruit trees were given out to people in the District from the several gardens.

Work done by private persons and village communities.—During the period under report a large number of fruit and shade-giving-trees were planted by private persons and village communities. The subjoined list shows the number planted in each Tahsil:—

Tahsil.	*No. of trees.*
Rawalpindi	4,844
Attock	27,132
Kahuta	2,596
Pindigheb	220
Gujar Khan	5,831
Fattehjang	361
Total ...	40,984

The numbers given above indicate a desire on the part of the people in some of the Tahsils to aid in increasing the number of trees in the District. The great scarcity of water in Pindigheb and Fattehjang would account for individuals not having made any effort in those Tahsils.

Work done by Municipalities.—The Municipalities in the District have directed their attention to some extent to the subject of arboriculture. The Municipal Committee of Rawalpindi have shown some interest in the matter by maintaining and extending avenues along the roads and keeping up an ornamental garden; and the Municipality of Hazro, though it has but a small margin of income available for arboriculture, has spent money on the formation of an ornamental garden, and successfully planting therein about

800 trees. It is to be hoped that this Municipality will be able to arrange for the formation of a nursery, and that the Rawalpindi Municipal Committee will display increased interest in the matter.

Financial results.—The total income from all sources during the three years was Rs. 13,620, and the expenditure, Rs. 15,498 for the District; and, for the Municipalities Rs. 970 and Rs. 3,071, respectively, or in all Rs. 14,590 income against an expenditure of Rs. 18,569.

GUJRANWALA DISTRICT.

Rainfall.—The rainfall of the year 1887-88 was on the whole favourably for the arboricultural operations, the total fall being 24·1. The fall in each of the two succeeding years being 20·8 and 18·36 inches, respectively, was scanty and below the average.

Nurseries.—It will be seen that no effort has been made to increase the number of nurseries in this District. On the other hand those that existed have gradually disappeared, the trees being transplanted and the area under them being made over to the zemindars. The Canal Department has agreed to supply young plants in the Hafizabad Tahsil, and the Tahsildars of Gujranwala and Wazirabad make their own arrangements with the zemindars who usually lay out small nurseries near their wells for their own use.

Plantation and Groves.—There are no plantations or groves in this District.

Avenues.—No extensive operations were undertaken during the years under report, tree-planting being confined only to a few miles of some of the principal lines of communication. In 1886-88, 3 miles of the Gujranwala and Hafizabad road were planted; of these one mile failed. In the same year about 500 plants extending over a distance of 1 mile were planted on the Gujranwala and Khangah road. All these trees are reported to be in good condition.

The operations of the year 1888-89 were still more limited, planting about ¼ mile of the Gujranwala and Vanike road in the Gujranwala Tahsil, and ½ mile of the Wazirabad and Dhaunkal road in the Wazirabad Tahsil, being the only improvements of the year.

The year 1889-90 shows some signs of improvements. Tree-planting was extended to one mile of the Rawalpindi and Gujranwala road and 5 miles of the Vanike and Shekhupura road near Hafizabad in the Hafizabad Tahsil. Of the latter, 1 mile has failed; but the plants on the remaining 4 miles are reported to be in good condition, being watered from the canal which runs close by. The attention of the District Board has lately been drawn to this subject by the Commissioner, and measures are being taken to make further improvements.

No other roads were planted during the years under the report. The operations were confined to the usual filling in of gaps and blanks and the maintaining of existing trees and plants.

Method of planting.—The planting of trees and seedlings in this District is generally commenced in the month of January and February in the cold weather, and of July and August in the hot weather. The seedlings planted are generally under one year in age and rarely above two. They are taken out with their roots for transplantation; are planted 3 feet apart from each other, and are protected by bramble fencing. They are watered every second day where this can be done, otherwise every third or fourth day, till they attain sufficient height. Seedlings requiring frequent watering are not planted, because the cost of watering is prohibitive. Kikar, shisham and farash are found most suited to the soil.

Fruit trees.—In 1887-88, a considerable number of mango and jaman plants were obtained from the Lahore Agri-Horticultural gardens, Shalimar and elsewhere. Some of these were planted in the Station garden, and the rest were planted on selected roads in the Gujranwala Tahsil. The jaman trees have all died out, but the mango trees suffered only partially, and about 811 trees are still extant and in a flourishing state.

In the same year about 1,600 ber trees were grafted, but without success.

In 1888-89, seeds of date palm, (Egyptian and Persian) were received from the Director of Land Records for experimental sowings. They were distributed for sowing in the Station garden and to the Tahsildar and Executive Engineer, Chenab Canal, but it appears that the results were not on the whole satisfactory.

Statements Nos. VI and VII.—The following table shows the income from, and expenditure on, arboriculture during the past three years:—

	Income.	*Expenditure.*	*Surplus.*	*Deficit.*
1887-88 ...	792	6,889	...	6,097
1888-89 ...	1,435	6,857	...	5,422
1889-90 ...	2,015	6,106	...	4,091

It is clear that the District Board spends every year a large sum on arboriculture, but the results obtained are by no means satisfactory. This is due to the fact that no proper system has yet been set on foot, and that the establishment employed is not well controlled. The subject was discussed at the last meeting of the District Board when the employment of a Forester was suggested. The Board has gladly accepted this suggestion, and correspondence is now going on with the Conservator of Forests on the subject. It is therefore hoped that the next report will show much better results.

A map of the District showing progress of arboriculture is submitted herewith.

GUJRAT DISTRICT.

The returns for the past three years do not call for any special explanation. The expenditure is almost entirely devoted to keeping up the roadside avenues either by putting in new trees or by raising seedings. Almost all the main roads have been planted except in the Bar country of the Phalia Tahsil, where water is scarce and trees are difficult to raise without much expense.

Shisham and kikar are the trees that are mostly planted; they each do extremely well in the parts that are suited to them. Shisham grows where the land lies low or where it gets occasional floods. Kikar grows all over the District with little trouble, but for avenues shisham is preferred on account of its shade. Fodder is almost always plentiful and trees are not used for this purpose as they are in Districts further south like Rohtak, where in times of scarcity they form the chief means of sustenance for the flocks.

During the three years under report expenditure has been Rs. 9,504 and income Rs. 10,718. The income is almost entirely derived from loppings and thinnings. The avenues has increased by 13·2 miles during the three years.

JHELUM DISTRICT.

General Remarks.—The average rainfall in the District during the last three years was as follows:—

	Rs.
1887-88	15·765
1888-89	19·45
1889-90	23·055

while the rainfall in each Tahsil for the three years compares thus—

	1887-88.	1888-89.	1889-90.
Jhelum	21·96	27·30	37·19
Pind Dadan Khan	16·1	15·4	17·16
Chakwal	12·5	17·5	18·91
Talagang	12 5	17·60	18·96

Statement II.—There is an increase in the rainfall during 1889-90 as compared with the two preceding years. Consequently more area was brought under nursery as will be seen from the figures given below:—

1887-88	1·16 acres.
1888-89	·43 „
1889-90	2·83 „

The subjoined table shows the progress made in tree-planting during the three years:—

Tahsil.	Years.	Number planted.		Number dried up.	
		Trees.	Cuttings.	Trees.	Cuttings.
Jhelum	1887-88	...	1,900	...	550
	1888-89	...	1,100	...	200
	1889-90	324	1,100	22	70
Pind Dadan Khan	1887-88	140	...	...	...
	1888-89	50	...	...	...
	1889-90	...	...	...	...
Chakwal	1887-88	...	...	...	...
	1888-89	...	...	...	...
	1889-90	...	...	...	...
Talagang	1887-88	...	...	...	...
	1888-89	...	...	...	...
	1889-90	5	...	1	...
Total ...	1887-88	140	1,900	...	550
	1888-89	50	1,100	...	200
	1889-90	329	1,100	23	70
Grand Total ...		519	4,100	23	820

The above plants and cuttings consist of fruit trees planted in nurseries, the greater number of which proved successful—

None of these have yet been distributed among villagers.

There is no area under plantation, and therefore statement III has been left blank.

Groves.—Four decimal ninety-eight acres were transferred from nurseries to groves, but no new area was added for the purpose.

Avenues.—During the three years the length of roads in miles planted was as follows:—

	Miles.
1887-88	15·91
1888-89	10·36
1889-90	16·37

The increased area in 1889-90 is due to extensive plantation in roadside avenues in Tahsils Jhelum and Chakwal, and owing to the areas within the Municipalities of Jhelum and Pind Dadan Khan having been included.

A larger number of trees planted in Tahsil Chakwal succumbed for want of sufficient water being supplied them, the establishment not being equal to the task and rain not having fallen when it was much required.

The following table shows the number of trees planted during the three years :—

Tahsil.	Year.	Trees planted on roadsides.	Trees died.
Jhelum	1887-88	2,745	395
	1888-89	1,830	160
	1889-90	2,105	165
Pind Dadan Khan	1887-88	375	30
	1888-89	320	16
	1889-90	367	98
Chakwal	1887-88	250	50
	1888-89	459	150
	1889-90	1,500	1,000
Talagang	1887-88	1,800	536
	1888-89	713	35
	1889-90	692	48
Municipal, Jhelum	1887-88	...	...
	1888-89	...	...
	1889-90	270	134
Municipal, Pind Dadan Khan ...	1887-88	...	...
	1888-89	...	...
	1889-90	562	29
Total ...	1887-88	5,170	1,011
	1888-89	3,322	361
	1889-90	5,496	1,474
GRAND TOTAL ...	...	13,988	2,846

There is an increase of 2,002 trees compared with the figures of the triennial report of this District last submitted.

Plants for roadside avenues were obtained as follows :—

Jhelum.—From the Forest Department.

Pind Dadan Khan.—From Choya Saidan Shah nursery.

Chakwal.—From Small preserves maintained along the roadsides.

Talagang.—From private wells.

The trees planted were chiefly shisham, dhareq and kikar, &c., but the soil of this District is most congenial to the shisham.

The following comparative table shews the income and expenditure of the arbori-cultural operations for the last three years—

Tahsil.	Year.	Receipts.			Expenditure.			
		Garden.	Tree lopping and dead trees.	Total.	Garden.	Nurseries.	Planting roadside trees.	Total.
Jhelum	1887-88	100	741	841	2,583	300	1,064	3,947
	1888-89	110	690	800	2,682	300	1,216	4,198
	1889-90	138	168	306	2,481	300	1,424	4,205
Pind Dadan Khan ...	1887-88	285	153	438	346	376	...	722
	1888-89	202	136	338	329	391	...	720
	1889-90	378	564	942	311	414	...	725
Chakwal	1887-88	168	47	215	195	90	89	374
	1888-89	150	151	301	187	103	84	374
	1889-90	173	309	482	183	96	102	381
Talagang	1887-88	57	9	66	292	108	314	714
	1888-89	42	11	53	196	108	232	536
	1889-90	34	57	91	66	108	190	364
Total ...	1887-88	610	950	1,560	3,416	874	1,467	5,757
	1888-89	504	988	1,492	3,394	902	1,532	5,828
	1889-90	723	1,098	1,821	3,041	918	1,716	5,676
Grand Total ...		1,837	3,036	4,873	9,851	2,694	4,715	17,260

There is an increase in the income during 1889-90 as against the two preceding years due chiefly to larger number of dead trees being sold, while in the expenditure there is a decrease owing to reduction of establishment.

The Establishment consists of—

Garden at Jhelum.

1	Supervisor	25	per mensem.
1	Mali	8	
1	„	7	
13	Coolies @ 5 each	65	

Garden at Choya Saidan Shah,

Tahsil Pind Dadan Khan.

1	Mali	15	„ „
3	Coolies @ 5 each	15	

Garden at Kalar Kahar,

Tahsil Chakwal.

1	Mali	10	„ „
1	Coolie	5	

Roadside tree and nursery Establishment,

Jhelum Tahsil.

2	Jamadar's @ Rs. 8-8 each	17	„ „
10	Coolies „ „ 5 „	50	

Pind Dadan Khan.

	Pakhali	12	„ „
4	Coolies @ Rs. 5 each	20	

Chakwal.

2	Pakhalies @ Rs. 7 each	14	„ „
1	Bhisti	1	

Talagang.

2	Pakhalies @ Rs. 7 each	14	„ „
2	Coolies @ „ 5 „	10	

DERAJAT DIVISION.

BANNU DISTRICT.

General Remarks.—During the first two of the years under Review, the rainfall was scanty and unseasonable, but last year it was somewhat better, in that it came more seasonably.

The figures were—

		First half.	*Second half.*	*Total.*
1889-90	...	10·52	2·13	12·65
1888-89	...	9·45	3·80	13·25
1887-88	...	...	...	...

No extraordinary physical phenomena such as unusual drought, or hail storms, &c., can be said to have occurred during these years. The perennial canals which supply the roadside trees with water flowed with their customary force, but every year in the hot weather and during the Kharif sowings they are liable to run low, and this is the main cause of so many young trees dying off. There were no forest fires, nor were the shisham groves in the bed of the Indus unusually effected by alluvion or diluvian. Some of the roadside trees were blown down by storms, but this is a normal occurrence and happens every year. The heavy soil and superficial watering by irrigation cuts, prevent the trees taking good root, and it always happens that after a storm a number of trees are uprooted.

Description of work.—The principal work performed by the arboriculture establishment is the maintenance and extension of the avenues of trees along the public roads. In the map accompanying this report, the line of those avenues is indicated. Most of them radiate from Edwardesabad, but the road to Gambila is the only one that has been planted to any considerable length. The other diverging avenues are planted as far as can be conveniently and safely supervised, and it does not appear practicable to extend them much further under the present condition of affairs. The planting of roads through the Waziris' limits has been tried, but without much success, owing to the mischievous tendencies of the inhabitants. The only way it is possible to extend arboriculture on their limits is immediately in the neighbourhood of a Government building where they can be properly looked after. A good row of trees for a short distance has been planted lately by the Public Works Department leading up to their sarai at Domel, but careful supervision is necessary to prevent mischief being done.

The following figures shew the numbers of young trees planted during the last three years and the proportion of them that have survived:—

1st April.	*31st March.*	*No. planted.*	*Died.*	*Survived.*
1887	1888	3,447	679	2,768
1888	1889	5,116	1,814	3,302
1889	1890	1,481	614	867

These figures would shew that the last year has been the least satisfactory of all. They shew a falling off that is regrettable: and assuming the figures of the previous years to be correct, I can only account for it by slackness on the part of the subordinate establishment accompanied by a press of work which prevented, on the part of the superior officers, all the supervision that was desirable. Tree-planting on the road sides is pursued in this District with considerable difficulty. The adjoining zemindars object to it and are in the habit of rooting up the young trees at night and then putting them back into their places, making it to appear that they have died a natural death. The existing fine avenues could hardly have been made under present conditions and were only carried out under a system of personal responsibility on the part of adjoining owners which now-a-days can hardly be well enforced. In addition to these and the natural difficulties, nearly all the water allowed at Settlement for arboriculture purposes has been assigned to various influential persons who now grudge to give the trees their due share, while making a handsome profit out of selling the water. Matters can hardly be expected to mend until these grants are resumed and the water applied to its proper purpose, or at least assigned only to adjoining owners. It was principally this water difficulty that prevented the carrying out of the proposal promised three years ago of making a nursery garden at Gandi Khan Khel. All the water that should go to such a nursery having been already assigned away, it will be necessary to first resume or reduce those grants, and this has not yet been attempted. The members of the District Board do not take any interest in arboriculture and some of them are the assignees of the tree water just referred to.

The area under nurseries and groves remains as before. It is the custom in the nurseries not to increase materially the extent of cultivation but merely to fill up with seedlings the space rendered vacant by withdrawal of young trees for the road sides. A new grove at Manjuwala is now being extended and improved with the help of a well there.

Establishment and Supervision.—The establishment consists of 25 malis and a Jamadar on Rs. 20 a month. The pay of a mali varies from Rs. 5 to 7 a month and 7 of them are paid by the Public Works Department for looking after the roads under that Department. The Public Works Department also keep some of the work in their

own hands and are making a nice avenue on the approach to the new Bridge on the Kohat road. The Public Works Department work at an advantage in some respects as at the places where they are planting trees, a certain quantity of the land on each side of the road has been taken up by them, and consequently the trees do not do so much harm to the zemindars' crop. Endeavour was made to get a trained Forest Officer or to get a young man from the District trained in the Forest Department; but the arrangement somehow fell through and the present Jamadar is not particularly well suited for the post. It was expected that he would be sufficiently able to supervise, and that the District Officer would be able to advise him in technical points with the aid of the long expected "Manual" which was promised in 1887-88 but has not yet appeared.

Financial Results.—Are sufficiently explained in Table IV.

DERA ISMAIL KHAN DISTRICT.

Rainfall.—Rainfall during the year under review was less by 4·06 inches than the average rainfall.

Nurseries.—Area under nurseries in the beginning of 1887-88 was little over 6 acres to which were added 1·75 acres during the year. Most of the nurseries are on the Dera Ismail Khan Tonk road where water is obtainable.

Plantation.—There are no plantations in the District.

Groves.—In the beginning of 1887-88, the area under groves was about 8 acres, and at the close of the year under report it is about double that area. There are 16 groves, 12 on the Dera Ismail Khan Tonk road and 4 on Kalur-Leiah road. They are all in a flourishing condition and being on the road side are a great boon to travellers.

Description of work—Avenues.—During the three years under report, a length of 13·27 miles was planted and a length of 15·51 miles failed, leaving 58·5 miles of road stocked with trees or plants at the close of the last year.

Dera-Tonk road.—The Dera-Tonk road is 42 miles long of which about 20 miles are planted with double line of trees and 5 miles with single line. Steps are being taken to plant some other portions of the road.

Kalur-Leiah road.—Kalur-Leiah road is 118 miles long of which 23 miles are planted with trees in different places and are doing well.

Bhakar-Jhang road.—Bhakar-Jhang road is 44 miles long of which 10 miles are planted, but owing to the continued drought in some places they are not in good condition.

Establishment and expenditure.—The establishment consists of 1 Jamadar, 1 Mate, several Malis and Beldars, costing about Rs. 2,000 a year.

Supervision.—Supervision is carried on under the immediate control of the Deputy Commissioner, the Tahsildars exercising the necessary supervision in their Tahsil Ilaquas.

Maintained by Municipality.—In Dera Ismail Khan itself a road of about 3 miles round the town with double lines of trees is maintained by the Municipality of Dera Ismail Khan, in addition to a Municipal garden outside the town and they both are in very good condition.

Cultivation of fruit trees.—The cultivation of fruit trees in this District is on a very limited scale and requires no special notice in the report.

A map shewing the operations of arboriculture in the District as prescribed in the Manual is attached to the report.

MUZAFFARGARH DISTRICT.

During the last years no new nurseries were established in this District as the existing nurseries were sufficient for planting trees on road sides. All plantings from the "19 wells on Sanawan and Gujrat road" were removed to the roads:—

(1). Mahmud Kot to Sanawan.
(2). Sanawan to Gujrat.

The trees at the nurseries of Hamzawali and Gulguliwala having grown up after transplantation having been continued from them for a number of years, have now been transferred to "groves."

There are no "plantations" in this District nor any new plantation has been taken in hand within the last three years, with the intention of producing a timber crop or afforestation.

The total area planted or transferred from "nurseries" to "groves" during the last three years was 33·250 acres as detailed below:—

Gerewahan grove	·375
Hamzawali ,, ...	25·375
Sanawan Railway Station grove ...	1·0
Gulguliwala grove	3·5
Kotaddu Railway Station grove ...	1·0
Daeradinpanah Railway Station grove ...	2·0
	33·250

The total length of roads fully stocked with trees or plants alive at the end of the year 1889-90 was 100·802 miles as compared with the length stocked at the end of the year 1887-88 which was 91·681 miles, thus showing a progress of 9·111 miles during the last two years.

The new plantations have been made on the following roads :—

Muzaffargarh	to	Aludewali *viâ* Khangarh.
Police Court	to	Takhtewali Bridge.
Shahr Sultan	to	Sitpur *viâ* Alipur.
Mahmudkot	to	Ahsanpur.
Muzaffargarh	to	Rohillanwali.
Alipur	to	Sitpur.
Muzaffargarh	to	Mahmudkot.

The total income from arboriculture during the last three years was Rs. 3,098 compared with Rs. 3,223, the income of the three preceding years. The small difference does not require explanation.

The total expenditure on arboriculture during the year 1889-90 was Rs. 8,162-10-11 as compared with Rs. 8,968-13-11 and Rs. 8,976-12-6, the expenditure during the years 1888-89 and 1887-88, respectively. The Budget provision for 1889-90 having been reduced by Government, the expenditure for that year was also therefore reduced.

Cultivation of fruit trees.—Nine hundred and seventy-seven fruit trees were newly planted during the last three years in the Taleri Gardens and Church gardens and Committee House Gardens at Muzaffargarh. No rules for the distribution of fruit trees among villagers have yet been adopted, because we have no spare plants in the public gardens sufficient for distribution.

DERA GHAZI KHAN DISTRICT.

Rainfall.—During the first two years of the period under report the rainfall was about up to the average, but in 1889-90, both summer and winter rains failed, and extra care was required in keeping the young trees in the avenues alive.

Nurseries.—Of the nurseries formerly under the District Officer and enumerated in detail in the report for 1886-87, those on the Dera Ismail Khan and Rajanpur Roads have been made over to the Public Works Department, together with the avenues on those roads, as will be explained below. The nurseries in the Government and Kutchery gardens are well stocked with young trees, which are given out in large numbers to the zemindars. The garden at Khar is doing extremely well. Mr. Dames took much interest in the cultivation of trees and planted out many on the top of the Fort Munro Hill, and as these get beyond the need of artificial assistance, others will be planted out. The garden at Buzkushi has failed. The spring which used to feed the garden has changed its course and now comes out of the rock at a point below the level of the garden. The plantation of shishams in the dry bed of the torrent at Buzkushi is still flourishing, as the trees are most of them old enough for their roots to reach down to the water below the surface.

Plantation and groves.—Plantations and groves which used formerly to be hown together in the returns have now been separated. The 135 acres of plantation are situated in Rakh Chabri and Kot Haibat. There is another plantation at the head of the Dhundi Canal in Rakh Khanwah which has not hitherto been included in these annual returns. Orders have been given to have it measured and shown in the returns in future. The 10 acres of grove are situated at the horse fair ground at Sharif Shah. An area of plantation said to be 91·5 acres has been made over to the Public Works Department with the avenues on the Dera Ismail Khan and Rajanpur roads.

As already mentioned a very large area of avenues containing some very fine shisham and other trees on the road running north from Mithankot through Rajanpur and Dera Ghazi Khan to Dera Ismail Khan, and on one or two other shorter roads has been recently made over to the Executive Engineer. These roads are under the charge of the Public Works Department, and on a representation from the Executive Engineer, it was decided to make over the avenues with the accompanying nurseries, plantations, &c., to him. I have been unable to obtain statistics as to the exact length of fresh avenues planted out during the three years under report, but I believe that a good deal has been done in that direction, especially in the Rajanpur Sub-division.

With reference to statement No. VII (Expenditure), I should explain that the increase in columns 2 and 8 and decrease in column 10 in the year 1889-90, as compared with previous years, is only nominal. The general establishment employed on the maintenance of gardens, avenues, and plantations was in former years shown in column 10. The heading of this column is "General Supervising Establishment, including Office Establishment," and as the ordinary establishment of gardeners, bhistis, &c., does not seem to fall under this category, it has been shown under columns 2 and 8.

PESHAWAR DIVISION.

Note by Commissioner.

Peshawar District.—The clearance of undergrowth and rank vegetation should always be carried out regularly, but trees take time to grow, and the older they are the more handsome and useful they become, *e. g.*, clumps of gum trees, pines, &c.: it is easy to cut down a tree in a few minutes that has taken years to grow. Decayed trees should of course be removed as occasion requires. The opening out of the Shahi Bagh by removal of jungle-growth is a decided improvement; but too many trees should not be cut down as besides their beauty they are a great comfort to the people who come out of the city and sit under their shade.

The Mackeson park and immediate neighbourhood to the west of the District offices and residency garden has been immensely improved during the past year, and has added much to the beauty of this part of the cantonment.

Though not appertaining to arboriculture, the Wazir Bagh and Shahi Bagh might be much improved and beautified by the construction of fountains in the series of old and still serviceable tanks built by former rulers in these gardens: the huge earthen wall surrounding the Wazir Bagh, and the earth concealing the tanks there, were removed when I was Deputy Commissioner of Peshawar, between 1871 and 1876: when the water-supply is extended to the city, the construction of the fountains will be a very simple matter.

The growing of timber for sale will probably never be undertaken by private enterprise, unless on poor lands by wealthy proprietors, when they come to understand the benefit of it.

The gum tree grows rapidly and coppices freely, and would therefore do well for fuel.

The jhand tree growing freely in the Leia Thal, Dera Ismail Khan District, is an exceptionally hardy tree, coppices freely, handsome if allowed to grow, and furnishes excellent fodder in its young shoots for cattle; such trees would no doubt be appreciated by the people.

Captain Deane during the time of his incumbency as Assistant Commissioner of the Yuzafzai Sub-division, has devoted much time and attention to what evidently is a congenial pursuit, and the results in the lenghts of well-planted out roads are remarkable and most satisfactory. In other parts of the District under Mr. Merk, Deputy Commissioner's directions, a great deal has been done, and in Hushtnaggar especially he has been energetically assisted by the Tahsildar, Moghal Khan.

The increase of orchards in the neighbourhood of Peshawar is very noticeable.

Hazara District.—The Civil Station Abbottabad, garden, main roads and Civil grass preserve to the west of it, Municipal garden at Haripur, roads not under old avenues, Mansehra Dâk Bungalow, Tahsil Shinkiari, Police Station, roads to Shinkiari and Agror, Torbela Police Station and road, Sultanpur camping ground and other localities were planted out with trees and fruit trees of different kinds, when I was Deputy Commissioner between 1866 and 1871.

There is no difficulty attending arboriculture in this District beyond protection from men and animals while the trees are young.

The main roads from Abbottabad to Haripur and Haripur for 6 miles on towards Torbela, were planted out in the early days of our rule, and are very handsome avenues for 3 miles east of Haripur and 6 miles to the north-west, where irrigation is available. Within the last few years, a very great advance has been made by the Executive Engineer in timbering the Hasan Abdal road for 5 miles from Haripur to Panian with well-grown shisham trees; the soil here is specially suited to this tree, and the avenue will be a very handsome one.

The pine, cedar, gum, and in fact all trees including fruit trees, thrive exceedingly well in Abbottabad and generally in the District, except of course in stony arid tracts where the indigenous growth is confined to the bog myrtle and *acacia modesta*. Several trees used to be sent by me to shrines and villages, and the tall gum tree can here and there be seen from a long distance.

It is curious that a kind of cinnamon tree should be found growing in the Dungagally mountain range covered by snow in the winter. I had some brought down, and a fine specimen and large tree is growing in the Haripur Municipal garden.

The kangar or kakkar of which there are several in the two or three sacred groves in Abbottabad, a native of the District, is a fine forest tree and the wood is good; some were planted by me in Peshawar 16 or 17 years ago, and are now large handsome trees.

Kohat District.—The Kohat District from its hilly and stony character, is unfavorable to arboriculture, but wherever water is available and soil good, and in places sanctified by some holy man, trees and groves are to be found well-grown and handsome.

In the neighbourhood of Kohat there are many orchards, and more are being planted. The public garden is a good one and well stocked, and the young date palms are growing freely. Gum, tallow and frash trees would thrive in many places, and the jhand, a hardy and most useful fodder tree, would soon spread if introduced.

A good plan on roadsides where it is too expensive to plant out trees in unsuitable soil is to arrange for the indigenous growth being allowed to advance to maturity: in this way ber, mimosa, camel thorn, wild olive and other shrubs and trees would in course of time attain a sufficient size to give shade, and afford protection to better kinds of trees that might be planted hereafter.

PESHAWAR DISTRICT.

Rainfall.—The statement will fully show the average rainfall of past years, as well as of the years under report. The figures are obtained from the register of rainfall prescribed by the Financial Commissioner, Punjab.

Nurseries.—About 4 acres of land were taken up for nurseries at the Peshawar and Murdan Tahsils, during the year under review. No area was given up or transferred to groves. For the reasons given below, there is no demand for nurseries of roadside trees, the tamarisk being grown from cuttings. Nurseries are maintained only for ornamental trees to be planted in gardens.

No plantation for producing timber was planted in this District during the three years under report, and the statement is therefore blank. As ample supplies of timber are floated down the Swat, Cabul, Bara and Indus rivers, timber plantation would be out of place here.

Groves.—Four-and-half acres of land were planted with groves in the Murdan Tahsil under the supervision of the Assistant Commissioner of the Yusafzai Sub-division.

Avenues.—Two hundred and eighty-two miles of various roads in this District were planted with young trees during the three years, of which 55 miles failed, and 227 miles remained fully stocked with trees at the end of March last. About half a mile of the city roads was also planted with young trees which are thriving well.

In a dry and arid climate, with so scanty a rainfall as that of Peshawar, a comparatively large percentage of failures must be expected. With tamarisks, however, this percentage is reduced to a minimum.

Income.—The income from the District Arboriculture during the years under report was Rs. 2,181, as against Rs. 1,900 realized in the previous years.

The income in the Peshawar Municipality under the same head was Rs. 8,038, or Rs. 1,101 more, as compared with the figures of the previous years. The cause of this increase is due to the sale proceeds of old trees cut from the Shahi Bagh garden. In the course of years more than half of this garden, about 60 acres, had become an impenetrable thicket. During the winter of 1888-89, and last year, I cleared off the jungle. This part of the garden has been turned into a grass park, some of the largest trees having been left standing, a change which has thrown open a large park to the people of the city, and at the same time has proved very profitable to the Municipality which this year makes a net profit of Rs. 1,100 on the grass.

The expenditure on District Arboriculture during the three years was Rs. 24,364, as follows :—

Gardens	...	Rs. 10,883
Avenues, &c.	...	„ 13,481

Rs. 10,883 were spent on the maintenance of ornamental gardens during the three years under report, or Rs. 4,222 more, as compared with the figures of the previous years. The following is the detail of charges :—

						Rs.
1	Jemadar	for 3 years	@ Rs. 15	per mensem	...	540
1	Jemadar	for 19 months	„ 14	„	...	266
2	Malis	for 26 „	„ 8	„	...	416
1	„	2 „	„ 8	„	...	16
3	„	8 „	„ 8	„	...	192
8	„	8 „	„ 7	„	...	448
9	„	8 „	„ 7	„	...	504
3	„	1 „	„ 7	„	...	17
7	„	19 „	„ 7	„	...	931
13	„	16 „	„ 6	„	...	1,248
12	„	10 „	„ 6	„	...	720
17	„	1 „	„ 6	„	...	102
11	„	1 „	„ 6	„	...	66
16	„	8 „	„ 6	„	...	768
9	„	12 „	„ 5	„	...	540
7	„	24 „	„ 5	„	...	840
Residency garden contingencies					...	1,235
Garkhatri		ditto			...	807
Nowshera		ditto			...	366
Utman Balak		ditto			...	230
Dandzai		ditto			...	15
Drain at the Charsudda Tahsil garden					...	70
Archway in the Residency garden					...	68
Conversion of the old Mounted Police lines into a lawn					...	478
				Total	...	10,883

The cause of excess expenditure of Rs. 4,222 under the Ornamental gardens was due to the entertainment of extra malis in the Residency garden to look after the Mackeson park which was made over to the District Board by the Cantonment Committee. The grass in the park was sold this year for Rs. 260, making lawns on the site of the Police line in the Residency and the Garkhatri gardens and along the roads outside the Kutchery compound, and to the purchase of lawn mowers, earthen pots for flowers, bullocks to draw water from the wells in the Tahsils of Naushera and swahi flower seeds, repairs of wells. The expenditure in the Peshawar Municipality under head "Arboriculture," was Rs. 18,699, or Rs. 10,812 less, as compared with the figures of the previous three years. The cause of this large decrease is due to masonry tanks, metalled roads, archways, vineries, &c., constructed in the Shahi Bagh and Wazir Bagh gardens in the previous years, none of which items of expenditure recurred during the years under review.

Trees of various descriptions were planted throughout the District at a cost of Rs. 13,481 or Rs. 6,550, over the expenditure of the previous three years.

The detail of expenditure incurred on planting avenues, &c., is as follows:—

							Rs.
3	Jemadars	for 24	months	Rs. 10	each per mensem	...	720
1	„	12	„	„ „ 10	„	... ...	120
1	„	36	„	„ „ 8	„	... ...	288
2	Malis	36	„	„ „ 7	„	... ...	504
19	„	24	„	„ „ 6	„	... ...	2,736
37	„	12	„	„ „ 5	„	... ...	2,220
36	„	24	„	„ „ 5	„	... ...	4,320
1	„	24	„	„ „ 4	„	.. ...	96
1	„	9	„	„ „ 4	„	... ...	36
1 Pakhal bullock for 24 months Rs. 4 each							96
Feed of bullocks							432
Land purchased for nurseries							78
Digging holes, making fences and cleaning drains along the roads and planting trees at Murdan							300
Digging holes, making fences, &c., for planting trees at Hushtnaggar							781
Ditto, ditto, ditto Dandzai							279
Ditto, ditto, ditto Peshawar							57
Land and grove purchased at Burj Harri Singh							152
Well on Murdan and Ismaila road							150
Water skins for watering trees							79
Drain for ditto							20
Seeds, &c.							17
					Total	...	13,481

The cause of excess expenditure is accounted for by the more extensive operations in connection with roadside arboriculture during the triennium under report, than during the preceding three years—281 miles as against 27 miles.

General Remarks.—As has been already pointed out, it does not pay in this District for Government, Local Bodies or private individuals to start timber plantations, for the supply of timber floated down the Indus, Swat, Cabul and Bara rivers is so abundant and cheap, and the quality of the timber obtained is so good as to drive local production out of the market. The only timber grown locally is by zemindars at their wells and irrigation canals for private use in well gear, ploughs, roofs of their houses, &c. Timber growing on a large scale is out of the question in this District.

It is much the same with fuel plantations. From independent territory all round the valley, fuel can be furnished and is furnished in quantity sufficient, and at rates low enough to make speculation in growing fuel unprofitable. How long this source of supply of fuel in the independent hills will last, I am unable to say. No doubt they are being stripped of their clothing of trees and shrubs, but only to a certain degree. The tribes are intelligent enough to see that it will ruin them to exhaust the wood, and accordingly every clan has its close season for wood cutting, as far as grass, and indiscriminate denudation of the hills is not permitted by them. It must be borne in mind too, that for hundreds of years have Afridi bullocks and donkeys laden with fuel streamed daily into the Peshawar city, of which the population was probably never less than 40,000 to 50,000 inhabitants, and yet the Afridi hills shew few signs of fuel exhaustion; although for the last 60 years (Sikh and English), there has been a large garrison stationed at Peshawar in addition to the fuel-consuming population of the city. What will happen when the hills give out, it is difficult to say, but I doubt if there will be much inconvenience for another generation at least, and by that time who knows what may have happened. We may have coal. In this District with so limited a rainfall, it is impracticable to start fuel plantations on unirrigated land; they would simply fail. A few thorn bushes no doubt could be induced to grow with much trouble and expense; but that is not a fuel plantation. On irrigated land, as has been shewn in correspondence on the subject with the Irrigation Department, taking the present price of land, the present land revenue payable or water-rate as the case may be, and the prices obtainable for irrigated crops, that it cannot pay for a zemindar to make a fuel plantation on his irrigated land in preference to cropping it. There is therefore not much object in advocating a measure which, as a matter of business, is unprofitable. The people are everywhere in

irrigated lands ready enough to plant trees round their wells or along their irrigation canals ; but this is not planting fuel, and is not intended by the people as such. More than that they will not do because it does not pay. With regard to roadside arboriculture, advantage was taken during the three years under report of the Swat Canal Irrigation to plant many roads in the Murdan and Hushtnaggar Tahsils. In the former, Captain Deane, Assistant Commissioner in charge of the Yusafzai Sub-division, carried on operations : in the latter trees were put down by the District Officer through the Tahsildar of Hushtnaggar. The question frequently was discussed as to which were the best kinds to plant. Captain Deane inclining to prefer shisham, toon trees, &c., while the Deputy Commissioner thought the tamarisk to be the most suitable tree, bearing in mind the magnificient tamarisk avenue from Akbarpura to Nessutta. It was eventually decided to plant nothing but tamarisk. For roadside arboriculture the object is to get that tree which shall give the maximum of shade in the shortest time of growth with the minimum risk of loss of young trees, and minimum cost of protection and watering, *i. e.*, minimum cost of service. In this District, the tamarisk fulfills all these conditions better than all other kinds of trees. It grows very quickly, is most hardy, after the first two years wants no water ; no animal eats it except camels, the wood is good, and it gives splendid shade. Thanks are due to Captain Deane for the excellent work done by him at Murdan in making what will be beautiful avenues of shishams, toon trees and other ornamental trees. In Hushtnaggar, Tahsildar Moghal Khan carried out his instructions with energy and loyalty, and it is pleasant to see avenues growing up all over the formerly treeless Maira.

Tahsildar Mir Akbar Shah of Peshawar also shews an interest in arboriculture, as does Tahsildar Abdulla Khan of Swabi.

Since the partition of the Hushtnaggar Maira, now that every man knows his own, the people are busy putting down trees and orchards.

In respect of the cultivation of fruit trees, the people of Peshawar require no encouragement as you are aware. And since the Railway has linked the valley with the Punjab, and fruit (grapes, apricots, peaches, melons), can be sent by rail profitably to Rawalpindi, Murree, Jhelum, Sialkot and Lahore, the practice of laying down orchards and vineries is extending rapidly in the irrigated tracts. No doubt there is room for improvement in the quality of the fruit ; but this is not a subject on which one is competent to offer advice and give instructions to the owners of orchards without professional training.

It is very probable, however, that the wide market opened by the Railway will make growers keen to supply a good article, and that in the course of competition, an improvement will gradually and insensibly be brought about.

HAZARA DISTRICT.

Rainfall.—The rainfall of the years under report is detailed in rainfall return. The total rainfall being—

			Inches.	*Tenth.*
1887-88	...	...	85	7
1888-89	...	...	96	8
1889-90	...	...	97	6

The rainfall of the year 1887-88 and 1889-90, though above the average, was not seasonable. There was good rain in June, July and August, and a great deal of tree-planting was done ; but the want of sufficient rain in the following months resulted in the loss of a large number of young trees.

Description of work.—Nurseries.—The nurseries have been replenished and well looked after. They provide a large number of young trees suitable for planting on roadsides. The nurseries are—

Abbottabad	...	District Committee nursery. Municipal „ „ Civil Rakh nursery. Dhobi Ghat „
Haripur	...	Haripur Nazul. Garden nursery.
Mansehra	...	Mansehra „ Shinkiari „

Three hundred chestnut, walnut, gum, sofaida and cyprus young trees were sent to Rawalpindi early this year to be planted on the Railway roads from the Abbottabad nurseries. A large number of young trees were distributed to zemindars and jagirdars from the Haripur nurseries. The trees which are usually planted in the nurseries of this District are—

Chir (Pine).	Eucalyptus of various kinds.
Pomegranates.	Walnut.
Deodar.	Alu Bokhara.
Hari.	Mulberry.
Plums.	Amloke.
Cherry.	Apricot.
Cyprus.	Locate.
Chestnut.	Mangoes.
Quince.	

Plantations.—A lot of bayar seed was planted on Civil rakh hill last year. Two-and-half acres of area was planted with young trees of all kinds on the Sarban rakh, 1½ acre of which failed during the years under report. Chir trees were planted on the Civil rakh at Abbottabad to the extent of ¾ acres and are doing well.

Groves.—No new groves were planted during the last three years. The existing groves are mentioned in statement No. IV. The afforestation of the hill waste close to Abbottabad called Sarban rakh has so far proved a success, and is being extended.

Avenues.—The work done during the years under report consisted of replacing dead trees with fresh ones wherever required, and of filling up gaps in the existing avenues.

The map of the District attached (as required by para. 11, Part IV of instructions for the preparation of triennial reports and annual statement), will show the roads planted with trees as well as nurseries and groves.

The roads on which any work has been done are—

Dhobi Ghat road.
Circular road Mansehra.
Mansehra to Data.
Chitti Gatti to Banda Piran.
Shinkiari to Bajna.
Chitti Gatti to Baffa.
Haripur Circular road.
Haripur Bazar road.
Road from Haripur to Darvesh.

The trunk roads are under the Executive Engineer, Peshawar Provincial Division, and have been omitted from the statement as well as the map of the District. Nine-tenths of the District is hilly or mountainous. Where the roads or tracks pass over low dry hills, tree-planting is impossible: in the higher hills the roads usually run through forests, and roadside avenues are out of the question.

Income.—Statement of Income No. VI will show the income derived from ornamental gardens, nurseries, plantations, groves and avenues, during the three years under report. The income credited to District Funds was—

		Rs.
1887-88	...	175
1888-89	...	196
1889-90	...	385
Total	...	756

and to Municipal Funds—

		Rs.
1887-88	...	2,293
1888-89	...	2,142
1889-90	...	2,576
Total	...	7,011

It will be noticed that the income is on the increase.

The increased income during 1889-90 is due to the fact that income from sale of young trees was abnormally large in Haripur nursery, and District Funds nursery at Abbottabad. A small plot of land bought by the District Board for a nursery at Mansehra was given up and sold, and the proceeds of the sale swell the apparent income.

Expenditure.—The total expenditure as shown in statement No. VII was—

District Fund.

		Rs.
1887-88	...	696
1888-89	...	653
1889-90	...	644
Total	...	1,993

Haripur and Abbottabad.

MUNICIPAL FUND.

		Rs.
1887-88	...	1,813
1888-89	...	1,570
1889-90	...	1,538
Total	...	4,921

and when compared with income—

DISTRICT FUND.

		Rs.
Income	...	756
Expenditure	...	1,993
Deficit	...	1,237

MUNICIPAL FUND.

		Rs.
Income	...	7,011
Expenditure	...	4,921
Surplus	...	2,090

and with total income and expenditure of both funds—

Years.	*Income.*	*Expenditure.*
	Rs.	Rs.
1887-88	2,468	2,509
1888-89	2,338	2,223
1889-90	2,961	2,182
Total ...	7,767	6,914

or 853 surplus. As the whole of the ready made avenues were long ago transferred to the Public Works Department, the District Fund has no opportunity of recouping itself from the expenditure incurred thereon. The income of the District Fund is only from trees of more recent date and from sale of grass of Civil rakhs at Abbottabad. The District Fund expenditure shown above, includes Rs. 120 paid to Government Agri-Horticultural Gardens, Lahore, as annual subscription.

Establishment.—The establishment kept up by District Fund and Municipal Fund is as follows :—

DISTRICT FUND.

	Rs.
1 Mali @ Rs. 6	72
1 „ nursery @ Rs. 7	84
1 „ rakh „ „ 6	72
2 Malis (watchers of rakhs) @ Rs. 5 ...	120
2 „ Mansehra and Shinkiari @ Rs. 5 ...	120
Total ...	468

MUNICIPAL FUND.

Abbottabad.

	Rs.
1 Head gardener @ Rs. 15	180
1 Asst. „ „ „ 7	84
1 Gardener „ „ 2	24
3 Gardeners „ „ 6	216
Total ...	504

Haripur.

	Rs.
1 Head gardener @ Rs. 15	180
1 Asst. „ „ „ 7	84
9 Gardeners „ „ 6	540
Total ...	804

There is no supervising establishment entertained for the purpose.

Overseer of Local Funds and Tahsildars of the Tahsils exercise the necessary supervision.

Fodder trees.—In this District no trees are planted for fodder, but leaves of mulberry trees in the plains and of maples in the hills are used for feeding cattle.

Cultivation of fruit trees.—The fruit trees received from Simla under instructions of Director of Land Records and Agriculture were distributed to the following Native gentlemen and Raises :—

Names.	Apples.	Pears.	Plums.	Cherries.
Shahzada of Bokhara	10	5	...	5
Majlis-i-Islamian	10	5	...	5
Samundar Khan of Ghazi Habibulla	10	5	5	5
Hassan Shah of Data	5	5	...	5
Inayatulla Khan of Chambad	5	5	5	5
Dost Muhammad Khan of Shingri	5	5	5	5
Shahdad Khan of Bawa Pir Khan	5	5	5	5
Mr. Sohan Lal, late Postmaster	2	2	...	...
Abbottabad public garden	18	3	...	15
Total	70	40	20	50

The result will be reported in next triennial report.

Work done by private persons.—The Majlis Islamia, Abbottabad, have done a good deal towards planting fruit trees in the new Islamia garden ; about 200 young fruit trees have been planted successfully.

Maulvi Muhammad Ismail of Dhodial has planted about 2,000 young trees on the Shinkiari roads where he has built a well for public convenience.

General Remarks.—I have frequently reported at length the poverty of the Hazara District Board and its inability to incur increased expenditure on this or other departments. Schools, dispensaries and other fixed charges practically beyond control of the board, swallow up its income : with the utmost economy and care, barely Rs. 2,500 can be provided annually for public works of all kinds.

KOHAT DISTRICT.

Rainfall.—The following table shews the rainfall for each of the last three years (1887-88 to 1889-90), as compared with the average fall for the past 26 years as per table received from Financial Commissioner's office:—

1887-88	10·
1888-89	10·80
1889-90	14·88
Average for 26 years	19·37

The rain that fell in 1887-88 and first half of 1888-89, as also in the preceding year 1886-87, was very scanty, and was not well distributed. A fair amount of rain, however, fell from November 1888 to September 1889 at good intervals, after which again there was entire cessation of winter rains till the close of the year 1889-90. The seasons were therefore very unfavorable, but this did not much affect the plantation in avenues on roads in charge of the District Board, as they are watered from Toi and other streams.

In the kharif of 1888 the water in the Toi was, however, much diminished owing to prolonged drought, and the trees in avenues suffered to a great extent.

Description of work—Planting of trees in avenues.—The following statement will shew the progress made during each of the past three years in planting trees in avenues in charge of the District Board :—

Name of Road.	No. of trees on 31st March 1884.	No. of trees planted during three years 1884-85 to 1886-87.	No. of trees died during three years 1884-85 to 1886-87.	No. of trees remaining on 1st April 1887.	Planted during three years 1887-88 to 1889-90.				No. of trees died during three years 1887-88 to 1889-90.	No. of trees remaining on 31st March 1890.
					1887-88.	1888-89.	1889-90.	Total.		
Circular Road Bezadi,	152	1,612	999	765	340	209	153	702	561	906
Jarwanda Road ...	...	1,627	201	1,426	1,218	413	674	2,305	418	3,313
Total ...	152	3,239	1,200	2.191	1,558	622	827	3.007	979	4,219

Bezadi Circular Road.—The work done on this road consisted chiefly of filling gaps and blanks and replacing dead trees in avenues and preservation of trees previously planted. Seven hundred and two trees were planted of which 561 died. The soil of the road is not good, and the result of much labour expended is most disappointing. It is now proposed to replace most of the existing seedlings with peepul (*ficus religios*) and bor (*ficus indian*) which appear to be the only trees which thrive in this particular locality. Gum trees (*Eucalyptus*) do fairly well, but all other kinds are a failure.

Jarwanda Road.—The trees on this road consisting of chiefly mulberry, shisham, willow, kachnar, &c., are in much the same condition as those on the Bezadi Circular road, and the same conditions of soil obtain.

Some have attained a height of 5 to 25 feet and they do not require thinning or lopping as yet. Two thousand, three hundred and five trees were planted, of which 418 or 18 per cent. died: the remainder grow very slowly.

Plantation was extended by ·515 mile on this road during the period under report.

This road is about to be extended further so as to connect it with the Hangu main road. When it is completed, the planting of trees in avenues will be taken in hand, and as on the other roads, peepul and bor will be mostly tried.

Groves.—There are only 2 small groves in the District under the charge of the District Board, and little has been done to extend the area under groves.

Nurseries.—There are two small nurseries containing shisham, mulberry, sarin, bakain, kachnar and other trees on the Circular road. They supply plants in alternate years for this road as well as the Jarwanda road, but the supply is insufficient and the plants for these roads were occasionally procured from the Municipal garden and elsewhere.

Steps will be taken to purchase plots of lands suitable for nurseries ; and cuttings of fruit trees will be sown in them. These will then be transplanted in avenues and distributed among zemindars in the district.

Cultivation of date palm in the District.—About one maund of imported date palm seeds were obtained in 1889, with a view to ascertain if this most valuable and useful tree can be cultivated with any degree of success in this District, which at the best is an unfavorable one for arboriculture generally. Thirty-five seers of them were sown under the supervision of Lieutenant A. H. McMahon, Assistant Commissioner, in pots and boxes in the Municipal garden, in accordance with the directions received from the Director of Land Records and Agriculture, Punjab.

The seedlings are mostly flourishing, some of them being 6 to 9 inches in height, and it is hoped that the experiment will turn out a success. These seeds were also distributed in small quantities amongst the leading men in the District with directions in vernacular for sowing. The seedlings when ready for transplanting will be sent to the Barak Tappa of the Teri Tahsil, Khwara and Zira Jungles and other places in which it appears most likely that these trees will do well. They will, if successful, cover a large area, and are likely to be a source of considerable revenue to the District in the future. A few mango trees have also been sown in pots as an experiment which have attained a height of 12 inches. They will be transplanted to suitable localities next year.

Method of planting.—Seedlings from 3 to 5 feet high are removed from nurseries and planted out in the spring (15th February to end of March) at intervals of 10 to 15 feet, and are generally fenced with thorns.

During the last two years, however, seed has also been sown in some places in drills as an experiment, which has been found successful, as plants have grown well.

Ornamental garden.—There is a public garden at Kohat in charge of the Municipal Board, Kohat, which has greatly improved under the supervision of Lieutenant A. H. McMahon, Assistant Commissioner. The Head Clerk of the District Office also looks after it and takes much interest in it. It contains various kinds of fruit trees, grapes, apples, guavas, peaches, plums, mangos, plantains, pomegranates, loquat and oranges, also bamboos

The fruit trees are annually brought from Lahore for planting in the garden. The following statement shews the receipts and expenditure of the garden during the past six years :—

Year.	Receipts.			Expenditure.									Deficit			Remarks.
				Pay of Establishment.			Miscellaneous expenses.			Total.						
	Rs.	A.	P	Rs.	A	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P	
1884-85 ...	279	8	0	326	0	0	262	13	6	588	13	6	309	5	6	* Includes Rs. 297-10-0 on account construction and improvements of roads.
1885-86 ...	265	0	0	344	12	6	57	3	6	402	0	0	137	0	0	
1886-87 ...	462	2	6	379	9	11	203	9	1	583	3	0	121	0	6	
1887-88 ...	445	0	0	394	0	0	233	8	6	627	8	6	182	8	6	† Includes Rs. 224-4-3 on account construction and improvements of roads.
1888-89 ...	572	12	0	396	0	0	*372	2	0	768	2	0	195	6	0	
1889-90 ...	545	15	3	394	0	0	†378	4	3	772	4	3	226	5	0	

It will be seen that the income has steadily increased, and had it not been for the construction of Dalls and other improvements, there should have been a surplus income. It is anticipated that with more careful supervision of sales of fruit, &c., the income will soon exceed the expenditure, though there are considerable difficulties to overcome, chief of which is the proverbial laziness of the Kohat "Mali." If not continually watched, the establishment do no work, and constant fines are necessary.

Financial Income and Expenditure and Establishment employed.—The following statement shews the income and expenditure for the three years under report :—

Year.	Income.			Expenditure establishment charges.			Miscellaneous.			Total.		
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
1887-88	0	0	0	312	0	0	47	0	0	359	0	0
1888-89	0	0	0	310	0	0	0	0	0	310	0	0
1889-90	23	0	0	290	0	0	230	0	0	520	0	0

The strength of establishment employed during these years is—

			Per mensem.		*Per annum.*
			Rs.		Rs.
4 Rangers @	Rs. 5	=	20	or	240
1 Bhishti „	„ 6	=	6	or	72
			26	or	312

who were employed as shewn below :—

Two malis on the Circular road and two on the Jarwanda road, and one bhishti to look after the grove in the enclosure of Dâk Bungalow at Khushalgarh.

Rupees 23 only was realized in 1889-90 from the sale of grass on the Circular road. There has been no other income as the trees are as yet too small to require thinning or lopping.

Cultivation of fruit trees and their distribution among villagers.—No attempt has hitherto been made to cultivate and distribute fruit trees among villagers, date palm seed have however lately been sown, and the seedings when ready will be given for planting in likely places as before-mentioned.

There are a large number of flourishing gardens in the vicinity of Kohat which contain good fruit trees. Much energy is being displayed by the people in planting fruit trees, but though the Tahsildar and the District Officer have tried to induce them to go in for pruning and thinning, it is impossible to get them to understand that without these operations, the quality of the fruit must suffer. Quantity not quality is what they prefer, and the consequence is an accumulation of tangled jungle all round cantonments which contributes largely to the unhealthiness of Kohat. Last year, however, some of the gardens were thinned to a certain extent, and it is hoped that continued efforts in this direction will gradually result in overcoming the natural apathy of the people as regards the quality of their fruit. About 500 of orange, plantain and loquat trees were brought from Lahore in 1887-88 and 1888-89, and 700 in 1889-90.

A large number of trees have been planted by the villagers at wells, tanks, mosques, &c.

The climate and soil of villages of the Kohat and Hangu Tahsils where there is plenty of water, is favorable to the cultivation of fruit trees. Arrangements will therefore be made for the formation of a nursery for fruit trees. There are about 200 apple plants, &c., in the nursery of the Municipal garden which will be distributed among villagers as an experiment, and endeavours will be made to induce them to purchase them.

Planting of fodder trees.—As this is a hilly District which contains good waste lands available for grazing grounds, no mortality amongst cattle from scarcity of pasturage in consequence of drought is known, except in the unirrigated tracts of Khwara and Zira. In these tracts, although there is a large forest area available for grazing cattle, yet as there was prolonged drought and a succession of bad harvests, the people suffered equally with the cattle from scarcity of food.

"Kao (wild olive) and "ber" (a wild thorny fruit tree) are the only kinds of trees grown in this District which are browsed on by cattle. Both of them are of spontaneous growth, the former growing on the hills and the latter in the plains. If the experiment of grafting the wild olive with grafts from Italy, which it is understood is under contemplation in the Murree hills, turns out successfully, it may be possible to do something in this District in the same direction.

Extension of arboriculture.—The circumstances of the District are not favorable to arboriculture.

The Khattak Ilaqa gets so little water that hardly any scheme of arboriculture can be successfully carried on there. In the Barak Tappa of that Ilaqa, however, trees are being planted by the people themselves near wells, &c. It has now also been proposed to cultivate date palm trees there. In the Hangu Tahsil, there is no road in charge of the District Board suitable for establishing avenues. The people, however, themselves plant trees where suitable places can be found, though owing to the large herds of goats possessed by every village, much damage is done, and comparatively few trees arrive at maturity. As regards the forest tract of the Khwara and Zira, an elaborate scheme for its conservancy has lately been sanctioned and introduced, it having been brought under the operation of the Forest Act VII of 1878. It has also been proposed to cultivate date palm trees there.

The only places where any improvement can be effected are, therefore, Kohat and its neighbourhood; but to do this effectively, a much larger establishment of malis and bhishtis is necessary.

The following are the roads on which the planting of trees in avenues is being or will be carried out by the District and Municipal Boards as funds are available:—

District Roads.

1. Jarwanda Circular road.
2. Bezadi Circular road.
3. Tappi and Bahadarkot road.
4. Kharmatu and Whoda road.
5. Part of Jarwanda, *i.e.*, proposed extension of Jarwanda road to meet the Hangu main road.
6. Road leading to Mirkhweli from Tahsil gate.

Municipal Roads.

7. Road leading to Bar from Tahsil gate to Gari Mawaz Khan.
8. Road from Tahsil gate to meet Hangu road near the Jail.
9. Ditto ditto ditto Public Works godown.
10. Ditto ditto ditto Police lines.

Hitherto, the funds at the disposal of the District Board have been too small to allot any large amount for arboriculture, and no noticeable improvement could therefore be expected in that direction.

Now that under the recent orders of Government, there has been, with effect from 1st April 1889, an annual saving of Rs. 1,702 of the amount of contribution payable from District Fund for District Dâk Establishment. The District Board will be asked to allot a further sum for the above purpose.

The attention of the Municipal Board at Kohat will also be invited to the matter, and they will be asked to carry on arboricultural operations on roads, &c., within the limits of the Municipality.

When the manual of arboriculture referred to in the enclosure Circular No. 31—552 of 13th February 1890, has been received, steps will be taken with the increased allotment—

(*a*) to extend operations on other roads mentioned above;
(*b*) to carry on cultivation of date palm trees throughout the District;
(*c*) to plant fruit trees and distribute them among zemindars;
(*d*) to extend the areas of nurseries and groves.

The map of the District referred to in para. 11 of the instructions for the preparation of triennial reports which was obtained from the office of the Director of Land Records and Agriculture on application, is herewith submitted. There are two nurseries on the Circular road, and a small one in the Municipal garden. The area of these three nurseries is ·56 acres, and has not been shewn on the map, being very small. The Circular road is fully planted with young trees, and has been marked with a full red line; and the Jarwanda road has been marked with a dotted red line, it being partially planted with young trees.

Experiments have been carried on during the year in the Municipal garden with the rain-tree (*albizzia*) and the *robinia* tree; but I regret to say that they have failed. Both of these trees would be valuable if they could be raised successfully.

CANAL DIVISIONS.

1st DIVISION, BARI DOAB CANAL.

District Gurdaspur.

Operations.—The work done during the last three years has been—maintenance of existing avenues, groves and plantations. Cutting down the trees on the Kallair-Kunjar reach and fencing it in before proceeding to afforest it. The Canal banks are fully stocked with trees on the Main Line and Main Branch Upper. On the Kasur and Sobraon Branches a great deal still remains to be done in afforesting, but it is questionable how far it will pay to proceed with the work.

Income.—The income was derived from sale of wood, grass and garden produce.

Afforestation of Kallair-Kunjar reach.—A sum of Rs. 632 was recently spent on the reach of the canal extending from the Kallair to the Kunjar Bridge, on the Main Branch Upper. This reach 3·2 miles long on each bank has been cleared of trees which had fully matured. It is intended to resow with shisham seed after the jungle has been cleared off and the ground ploughed up. Barbed wire fencing has been erected along the reach on each boundary to keep out cattle.

Amritsar District.—Kasur and Sobraon Branches.

Maintenance of the earlier plantations sown on Kasur and Sobraon Braaches.—These plantations are five in number, *viz.*, Jhandiala and Pakhohi on Lower Kasur Branch and Khawaspur and Gaggarbhana on the Sobraon Branch sown in 1884-85, and Deo on the Lower Kasur Branch sown in 1886-87. Their extent and area are as follows :—

Jhandiala	B. M.	160	to	168	area	25½	acres.
Pakhohi	„	178	to	196	„	56·4	„
Deo	„	196	to	203	„	15	„
Gaggarbhana	„	149	to	155	„	21	„
Khawaspur	„	220	to	223	„	10	„
				Total	...	127·9	„

Jhandiala, Pakhohi and Deo plantations were considered to have been thoroughly established by the end of 1886-87, but as the trees were not sufficiently advanced to take care of themselves, and there were many high places and blanks that required to be filled in, the wire fence was allowed to stand and a Beldar establishment sanctioned every year in an annual estimate for their maintenance. The duty of this establishment during the three years under review has been to clear silt and repair khals, fill in blanks, and to tend and water the trees. Though these plantations are now fully stocked, still there are many places where the trees have not grown up to the proper height.

Gaggarbhana plantation was originally sown from B. M. 96 to 155 Sobraon Branch, but as the sowing was not successful, this length was reduced year after year till it remained only from B. M. 126 to 155. Even this was not quite successful, therefore it was again reduced in 1888-89 and all the available wire fencing removed to Khara where a new plantation was being laid out. The Gaggarbhana plantation now extends from B. M. 149 to 155 and is fully stocked with trees in this part.

Khawaspur plantation.—This was originally started as an experimental unirrigated plantation. Kikar seed was sown broad-cast, and the sowing renewed from time to time wherever it failed to grow, till in 1887 it was fairly stocked with trees. Since then during the two succeeding years, almost nothing was done beyond sowing kikar seed in blank places. In 1888-89, however, the whole of the blank and barren piece of high ground below the Khadur plantation was filled with shisham plants, but as flow irrigation at this place was impossible and watering by bhistis not sufficient, most of the plants died and had to be replaced. The present state of the plantation is very hopeful.

Later plantations.—There were five new plantations established, *viz.*, Sanghi and Sirhali on Kasur Branch lower and Raya, Khadur and Khara on Sobraon Branch.

The first four were sown in 1886-87.

Their extent and areas are as follows :—

Sanghi	B. M.	222	to	227	area	16	acres.
Sirhali	„	243	to	251	„	25½	„
Raya	„	155	to	165	„	29½	„
Khadur	„	211	to	220	„	30½	„
Khara	„	269	to	293	„	124½	„
				Total	...	226	

The Sanghi, Sirhali, Raya and Khadur plantations were commenced in December 1886, and by March 1887 they were so far advanced that sowing was commenced, and in April and May the whole of the sowing was done. The system of sowing adopted in these plantations was generally along cross trenches 10 feet apart; but in some cases where the ground was not level, and the whole of the water let in for irrigation tended to lodge in the centre where it was deeper, as at Sanghi, instead of cross longitudinal, trenches were made parallel to the canal. All these plantations are fenced by wire fixed to 4½ feet, posts placed 12½ feet apart on the berm of a ditch provided outside the fence or on the bank of the ditch Rajbahas where there is such. In each plantation two malis huts are provided for the esablishment—one at each end on the opposite banks of the canal. Irrigation in them is generally by flow by means of pipe outlets except in a portion of the Sirhali and Khadur plantations. In the lower part of the Sirhali plantation where water could not rise from the Rasulpur Rajbaha, two stream wheels have been provided in the canal, and all irrigation in that part is done by them

In the Khadur plantation.—There is no Rajbaha near enough on the left bank from where irrigation on that side could be possible, nor could a stream wheel in the canal efficiently work at that place, therefore an iron acqueduct has been provided across the canal to take water from Patti Rajbaha which runs along the right spoil bank. Though almost the whole of the fenced area of the new plantations with the exception of tanks, was sown on the trench system, still there were many portions in the Raya plantation where the ground was so uneven and high, that trees could not grow. It was therefore tried as an experiment to plough and level these portions and sow them with shisham seed broad-cast. The seed germinated freely, and all those unsightly places are now full of trees with the exception of a few chains of tanks in Raya and Sirhali plantations; all these plantations are fully stocked with trees.

Attempts have also been made to fill in the tanks by "Phurrash" and "willow" trees, a number of which are still growing though most of them died.

Khara plantation.—This plantation was started in 1888, and by the beginning of April 1889, the whole of the area comprising 24½ acres was ploughed, levelled, fenced and sown.

Irrigation in it is by means of outlets on Khara Rajbaha, and two iron and one wooden acqueducts have been provided across the canal to take water to the right bank on which side there is no other means of irrigation. As in other new plantations, in this also malis huts have been provided at both ends on the opposite banks of the canal. The chief feature of this plantation is that in it the old system of sowing along trenches has been entirely given up, and the whole of the ground with the exception of a few chains of sand hills, where trenching has been resorted to, is sown broad-cast, as this way of sowing was found most successful in the experimental plots of the Raya plantation. The plantation has grown very well all over, and on the left bank, where probably more attention has been paid, it is exceptionally good for its age.

Planting of avenue trees.—The total length of new avenue trees planted during the past three years is 12·24 miles. They have been planted along both banks of the canal in the new plantations where previous to the starting of these plantations there were no line trees, and have grown up successfully. Besides these, line trees have also been planted this year between B. M's. 200 and 211, and from B. M. 223 to 225 of the Sobraon Branch where there were banks, and these also promise to grow up well.

2ND DIVISION, BARI DOAB CANAL.

Main Branch Lower.—During the three years ending with 1889-90, the existing plantations on the Branch specified below were tended and watered, and the young trees were thinned out, when growing too thickly with good results:—

(1).	Kotla plantation ...	... B. M.	53— 54
(2).	Grand Trunk Road Bridge plantation	... do.	99—108
(3.)	Jagatpur plantation	... do.	154—162
(4).	Kalsian „	... do.	233—235
(5).	Bedian „	... do.	271
(6.)	Mir Mahammad plantation ...	... do.	347

In order to make room for a new plantation on this branch, an area of 106·52 acres of wooded banks on both sides of the canal between Dal and Bedian Bridges (B. M. 247—270) was cleared of—all but avenue or line trees. The standing trees were sold to a contractor who felled and removed them. The ground was then ploughed over and prepared for re-afforestation, and up to the end of last year an area of 58·95 has been replanted with shisham in this reach. The trees and shrubs in chouki compounds on this branch, and its Rajbahas were watered and looked after as usual.

Lahore Branch.—On this branch the plantations at Majjapur, Kohali, and Niaz Beg and the groves and shrubs at canal and Rajbaha choukis were carefully tended and improved.

At Majjapur the soil is very poor, but after several failures the last showings of shisham have been fairly successful. At Kohali, blank spaces in the upper island were trenched and resown with shisham, and the plantation is now doing well. At Niaz Beg, in the plot lying between the Niaz Beg rajbaha and the tail escape channel spaces where the first sowings had failed were re-planted, and their plot is now well stocked with young shishams. During the period under review no new plantations were commenced on the Lahore branch.

General.—The canal banks of both branches in this division are generally speaking well stocked with trees of good growth, mostly shisham and kikar with some tun, mulberry, siris and tamarisk trees. Portions estimated at about 30 per cent. are thinly stocked. Reaches which are absolutely bare of trees are not of considerable length anywhere, and such complete blanks occur, as a rule, only where the soil has been found to be unsuitable for good plantation. Occasional violent storms do much damage among canal trees, whose roots generally have not a very deep and firm hold in the soil, but up to the present time casualties from this cause do not show very markedly.

Expenditure and income.—The total expenditure on plantation operations in this division during the last three years amounted to Rs. 8,030, as compared with Rs. 12,147 in the preceding three years. The decrease in expenditure is due less to new operations being undertaken during the triennial period to which this report refers.

The total income from plantations during the last three years amounted to Rs. 47,820, and the income in the preceding period of three years was Rs. 47,546, or very nearly the same, the difference being only Rs. 274. In the period under review a larger amount was realized by sales of wood on the Main Branch Lower, and less was realized by sales of grass, lower prices being latterly given for grass cutting on rajbahas, where grazing of cattle is strictly prohibited.

The net profit from plantations during the last three years amounted to Rs. 39,790, as compared with Rs. 35,399 in the preceding triennial period.

UPPER SUTLEJ DIVISION.

Rainfall.—During the three years under review the rainfall in the Lahore District has been under the average. In 1887-88, the rainfall was greatest approximating to the average; in the following year, it was about 4 inches below the average; in the past year, it was slightly less. In the Montgomery District during first and this year, the rainfall approximated to the average, but in 1888-89, it was only an inch in excess of half the average. The average for the three years, as compared with the average rainfall, was as follows:—

	Average of 3 years.	Average annual rainfall.
Lahore ...	... 17·43	21·64
Montgomery ...	... 8·66	10·54

III.—*Plantations.*

II.—Nurseries.—There are no nurseries or plantations in the division.

IV.—Groves.—The only groves on these canals are in chauki compounds. The largest grove is at Hussain Khanwala chauki on Katora Canal, and consists of shisham trees which are of a good size and no longer need watering. There is also a very fine grove of shisham trees of good size at Gudar Malkana Chouki situated between the Khanwah and Upper Sohag Canals, and a great many of the trees at Ganda Singh chauki at head of Katora Canal and Lola at head of Upper Sohag Canal are also of a good size. The rest of the groves all consist principally of young shisham trees, which need tending and watering. There are also a few pipal, mulberry, banyan and other trees on the canals of the Upper Sutlej series, *i. e.*, Katora, Khanwah and Upper Sohag. The trees in all the groves are thriving well, except at Ladian chauki, on Katora Canal and Shah Yekka chauki, near tail of Khanwah Canal. This is due to a great extent to scarcity of water, as there is no well at these chaukis. In the cases of Ladian chauki, a well has been sanctioned and is being built. Shah Yekka chauki is situated on a mound, the remains of an old village, and though there is a well below the mound, there is a good pull up; besides which the soil being composed of old bricks and rubbish is unfavorable to tree growth, the trees at Tahar chauki are also not in a very advanced state. There is a well in the compound and a Persian wheel is worked, but the compound is large and moreover trees in east side of compound are situated on high ground, and are watered by hand. None of the groves on the Lower Sohag and Para Canal are over 5 years' old. At Haveli and Kalewal chaukis, the trees are in a flourishing condition, and great numbers of them have attained the height of about 8 or 9 feet. The trees at Chawant have not thriven so well. This is due entirely to scarcity of water. There is a well in the compound and a Persian wheel is worked; but the water is about 45 below the surface, and it is therefore raised with labor and difficulty. At Kalyan, the trees are in a very poor condition, and have not received a sufficient

amount of attention. There is a zemindari well near the compound, but the trees are watered by hand. The sinking of a well seems called for and an estimate for a well will be submitted shortly. The only new plants sown during the period under report were date-palms. Forty-five were sown at Mamuke chauki compound in April 1888, of which 23 germinated and were transplanted in March 1889. These are doing well. Eighteen were sown at Ganda Singh chauki compound in August 1888, of these 7 only germinated and are not in a thriving condition, and are only about 1 foot high. Twenty-five were also sown at Lola chauki in August 1888, of which 18 germinated and were transplanted in March 1889, of these only 8 are in a fairly thriving condition, being about 1·25 feet. in height; the rest are only from 6 to 9 inches in height. Some seed was also sown on Lower Sohag and Para, but no correct information about these can be given as the Sub-Divisional Officer has failed to submit a report, though frequently asked to do so.

V. Avenues.—There are no regular avenues in this division. The trees common to this part of the country such as kikar, farash and a few shisham and sirus trees have grown up spontaneously more or less all along the canals of the Upper Sutlej series, and similar trees principally farash are springing up in parts of the Lower Sohag and Para canal below Haveli. These trees spring up on the inner slopes of banks and near the water's edge, and after they attain a good size are blown down by storms in great numbers into the channel of the canal. The planting of avenues on these canals is practically an impossibility—as the canals only run for about 4 months in the year, and even then no flow of irrigation can, as a rule, be obtained near the banks. It is therefore fortunate that there is a plentiful spontaneous growth, as any description of trees and in any position is acceptable in an arid tract such as the canals of this division cover.

VI. Income.—The income is derived principally from sale of fallen and dead trees and sale of grass on banks for grazing purposes and sarkana grass which springs up spontaneously.

The income during the three years under report was as follows:—

		Rs.
1887-88	...	3,667
1888-89	...	3,602
1889-90	...	3,231
		Average.
	3	10,500
		= 3,500

against an average income of Rs. 4,269 for the three previous years. The decrease is due to a decrease in income derived from sale of dead and fallen trees.

VII. Expenditure.—The expenditure incurred was almost entirely on maintaining plantations in chauki compounds. The watering was done in most cases by the Persian wheel or else by hand. The expenditure for the 3 years was as follows:—

		Rs.
1887-88	...	1,329
88-89	...	1,468
89-90	...	1,483
	3	4,280

Average Rs. 1,427 against Rs. 1,217 for the previous three years. The increase is small and is due to increase of expenditure on Lower Sohag and Para Canal. Deducting the average expenditure from the average income of the three years gives an annual average balance of Rs. 2,073 as profit. The income was derived entirely from the canals of the Upper Sutlej series, but about half the expenditure was incurred on the Lower Sohag and Para Canal.

LOWER SUTLEJ AND CHENAB DIVISION.

In this Division there are arboriculture operations on the—

(i). Chenab Canals.
(ii). Lower Sutlej Canals.
(iii). The Sidhnai Canal.

The expenditure and receipts on the Chenab and Lower Sutlej Canals are debited and credited to the grant for Minor Works and Navigation.

The Sidhnai Canal belongs to the class of Major Works. For this reason a separate report and a separate set of returns have been made for the latter.

Chenab and Lower Sutlej Canals.—The water brings down seed which lodges in the silt berms, and so along the water slopes these channels are more or less lined with trees. Where the soil of the banks is good, they grow luxuriantly, when cut down for widening or any other reason or blown down, fresh trees soon spring up in good soil.

Canal Chaukis.—The trees in these are planted out, but in most of the chaukis they are full grown and require no further maintenance.

Chenab Embankment.—This is planted out with double rows on either side; nearly all are full grown; very little maintenance is now required.

Groves on spoil banks.—A few have been started near Regulators on the Sutlej Canals, the regulating establishment being utilized in looking after them. These groves are not very successful, being on mounds of dry soil; there is great difficulty in providing a sufficient supply of water when the canals are dry.

Nurseries.—There are two small ones on the Sutlej Canals to provide trees for new chauki compounds and groves at Regulators.

Sidhnai Canal, Mooltan District.—1887-88. I.—The Canal was only opened in 1886. and plantation operations were started in the following year. Small nurseries of shisham were established at the Jodhpur, Kukarbatta and Rashida chaukies, and a few trees for avenues were planted out in various parts of the canal, aggregating a length 3·4 miles in a single line only.

1888-89. II.—During the next year 1888-89, the nurseries were renewed, and in August and September transplanting was started along the canal banks in miles 6 and 7 left banks, mile 26 both banks, and part of mile 21. The young trees have on the whole done well, very few being lost, and those in 26 mile having flourished remarkably well.

A beginning was made with the plantation in 12th mile, shisham and kikar seed being sown in trenches. The seed germinated well, but the young kikar plants were damaged by the frost in the cold weather.

Transplanting was continued in March 1889, and in all about 3,000 shisham seedlings put out in miles 6, 11, 12 left bank, and in miles 27, 28 right bank, and on the approach roads to Kukarbatta chauki. Some of the young trees were destroyed by the dust-storms of May, but on the whole the work was successful. The compounds of Jodhpur, Kukarbatta and Rashida chaukis were well stocked with young trees,—shisham, pipal, baman, kikar, tun and a few fruit trees—forming the nucleus of good groves. In the Sidhnai chauki compound there is a natural grove of kikar trees half an acre in extent.

1889-90. III.—During the year 1889-90, the planting out of avenue trees was pushed on in miles 7 and 8, 9,000 feet in length; miles 9 to 13, 17,000 feet; miles 21, 28, 30,000 feet; mile 36, 2,500 feet, in all, 11·7 miles. This represents trees in a single line, as up to the present the object has been to plant the trees first on the side of the canal on which the inspection road runs, the other banks will be dealt with later on. Out of the above about 1 mile of trees failed where the soil was unfavorable, the remainder have done well. In addition to the work of planting out avenue trees, 2 acres of nurseries were sown with kikar. The seed came up well.

Nothing could be done during the cold season 1889-90 owing to want of funds, all expenditure being restricted to strictly maintenance charges.

The avenues and plantations in this District, where the rainfall is very small, depend entirely on the canal for water, and this is only available as a rule from March to November.

The expenditure during the three years amounted to Rs. 3,646. The classification required by the Conservator of Forests has not hitherto been strictly adhered to. This has now been done in the Progress Report accompanying, from which it will be seen that the progress up to date on the Sidhnai Canal is as follows:—

Nurseries	...	3·5 acres.
Groves	...	11·5 „
Plantations	...	20·2 „
Avenues	...	15·4 miles.

INDUS CANALS DIVISION.

General Remarks.

1. The rainfall of the Dera Ghazi Khan District during the last three years has been as follows:—

	Inches
1887-88 ...	... 6·7
1888-89 ...	... 7·5
1889-90 ...	... 2·56

It has practically no effect on arboriculture in this division, where the trees are all watered from the canals in the hot weather, and from wells in the cold.

2. The trees are grown in avenues exclusively more than 85 per cent. of the trees, in which are shishams, with a few kikar, siris and farash at intervals.

The latter are of spontaneous growth, and though the timber they provide is not of much value, are useful for various purposes.

3. The length of bunds and canals fully stocked with trees or plants alive at the end of the year is as follows :—

	miles.
1887-88	155·164
1888-89	162·030
1889-90	166·031

On the other hand, several miles of well established avenues have been carried away by the incursion of the Indus. As was reported in the review of the last triennial period, the losses thus incurred are generally of the older avenues, the trees on which are established and able to dispense with manual care, so that the sum total in mileage of well planted avenues advances but slowly.

4. No new nurseries have been planted out as the existing area is found sufficient.

5. There are no groves in the division, as the chauki compounds though well planted are hardly to be so classified.

6. The establishment maintained consists of a staff of two mates and about 62 malis and bhistis, which is maintained with little variation from year to year.

7. The income from sales during the last year has been as follows :—

	Rs.
1887-88	... 856
1888-89	... 745
1889-90	... 1,587

The increase is due to the sale of trees cut down on the Kasturi Canal where it was crossed by the Stone bund recently constructed, and by sale of trees threatened by erosion on the Chibri and Sahaban Canals. As has been previously pointed out, the oldest avenues are with few exceptions still young, and the trees are still too deficient in heart wood to command a good price as timber.

MUZAFFARGARH CANALS DIVISION.

1. *Rainfall Return.*—The average annual rainfall in the District is 5·52 inches distributed as follows :—

	inches.	
1st April to 30th September	3·96	
1st October to 31st March	1·56	
	——	5·52

The rainfall during the past three years is as below :—

Year.	1st April to 30th Septr.	1st October to 31st March.	Total.
1887-88 ...	4·0	1·5	5·5
1888-89 ...	0 3	1·80	2·10
1889-90 ...	4·5	0·61	5·11

The rainfall is too small to have any important influence on the tree-growth in the District. It is useful, however, in cleaning the leaves and in checking various diseases that attack the fruit of both mango and date trees under the continued action of dust hot winds.

2. *Nurseries.*—Nurseries are only now being begun in the division. Hitherto planting out has been done mainly from seedlings such as are often found in sugar-cane fields and other favoured spots, but such seedlings, representing only a few months growth are not suitable for this purpose, and nurseries are required for the provision of proper plants.

3. *Plantations.*—There are no plantations in the division. No available ground being suitable for them.

4. *Groves.*—No groves have yet been made.

5. *Avenues.*—There are no avenues in the common acceptation of the term as there are no canal roads. The figures in the statement refer to trees on the canal banks. In this connection the figures given below may be interesting :—

Year.	*Number of trees.*			
	Shisham.	Kikar.	Others.	Total.
1887-88 ...	11,104	28,160	98,845	1,38,109
1888-89 ...	10,886	27,902	98,312	1,37,100
1889-90 ...	10,942	27,144	96,365	1,34,451.

It will be noticed there is a steady diminution in the number of trees classed. By far the greater part of the decrease is due to trees cut down in widening and improving the various canals and branches. In these old native channels many of the trees grow almost on the water's edge and must be cut down and cleaned away as the channels are improved and widened, and as the young trees planted out are still too small to be classified or counted, the list gets no present help from them. In a few years however these will come in the count and will make a substantial difference in the totals.

6. *Income from Arboriculture.*—The figures represent sales of wood, thinnings, &c. The trees compulsorily cut down (as explained in the preceding para.) were auctioned and often realized good prices.

7. *Expenditure on Arboriculture.*—Represents cost of malis, bhistis and coolie labour.

8. *General Remarks.*—Muzaffargarh is an arid District in which young trees need special care and tending. In the more jungly parts to which canal extensions are mainly confined, the water difficulty is a serious one. The canals run for about 6 months in the year, and after that the trees must be hand watered. The dryness of the climate and the frequency of dust storm in their season are also against the young growth, but when once the trees have established themselves, they grow well. The District is famous for the excellence of its shisham trees.

5.—KARNAL DIVISION, WESTERN JUMNA CANAL.

Avenues.—The right protective embankment at Tajehwala was planted on both sides with shisham and choice trees which are doing well. The left protective embankment was planted with young trees on one side to the extent of 1·6 miles only, and about a quarter mile on both sides.

Fattehgarh bund was planted with shisham, mango, tun, &c., to the length of one mile. Bund in Somb was planted with shisham and tun, about ¾ of a mile.

The following channels may be considered to have shade trees throughout on one side :—

1. Old Canal Indri to Budha Khera and Rer.
2. Singhoa cut (partly planted).
3. Old Hansi Canal from Rer to Bahadra and Mingni Khera Branches.
4. New Main Line from Indri to Rambha Uchana to Kaithal Bridge, Ghgoripur, Barota, Gagsina Syphon to Munak.
5. New Hansi Branch from Head to 8th mile.
6. Butana Canal and Branches.
7. Rer escape channel (trees grown spontaneously).

During the year 1889-90, shisham, jaman and mango trees have been planted above falls on the New Main Line on left or driving bank only for distance averaging 2,000 feet above each fall. The shisham planted out as line trees during three years under review are doing well, especially those planted out along the left bank, New Main Line, Gagsina to Munak, also above Mowana and above Sapdon Fall on the New Hansi Branch. All the remaining miles of canals have avenues in course of growth.

Three miles of plantation were felled on the Hansi Branch to enable the banks to be raised. The banks were completed in February 1890. New lines of tun trees were then planted along with them for a lenght of 3 miles of Hansi Canal.

Nurseries.—Tajehwala and Dadupur nurseries supplied a large number of trees, which have been planted along right and left protection embankments at Tajehwala and Fattehgarh Bund, and bund in Somb at Dadupur, and there are many still available.

All trees along New Main Line came from Karnal, Jani and Munak nurseries, and a few from Dadupur in descending boats.

Some experimental sowing of Busora date palms are doing well, and there are a large number of these plants in the compounds of Rambha, Karnal and Munak, and along New Hansi Branch above Sapdon Fall and along old Hansi Branch at Mowana.

In Lalldiggi garden, Hissar, ornamental fruit trees and shisham are grown.

The Butana nursery has supplied large number of trees, some 60 or 70 a year, of grafted mangoes to the chouki compounds, and in 1888 to Hissar Sub-division.

Groves.—These have been maintained and replenished. The mango garden at Karnal called Mayne Sahib's Bungalow has been sold by the Deputy Commissioner, Karnal, to the Kunjpura estate during the year, which has obtained a very satisfactory yield therefrom.

The New Main Line Chauki compounds have been supplied with suitable fruit and shade trees which are doing well.

At Munak are some Eucalyptus which are thriving, but many died on being transplanted. The seed was got from Okhla and Saharanpur.

Ornamental and fruit trees, *viz.*, mango, jaman, pomegranate, pear and plantains have been supplied to the compounds of chaukis, Jind, Narnaundh, Hansi, Hissar, Mingni Khera and Chani.

Plantation.—No statistics for this work were ever compiled.

Sowing kikar and shisham seeds broad-cast has been attended to: open places along New Main Line and Hansi Canal have been resown each year, especially the berms. The desiccation of kikar trees on New Main Line is a remarkable item and is so far inexplicable.

Financial Result.—The sale proceeds from the Canal plantations during the three years under review, show total receipts as under:—

	Rs.
1887-88	14,528
1888-89	7,283
1889-90	9,576
Total ...	31,387

Against the following expenditure:—

	Rs.
1887-88	5,659
1888-89	5,659
1889-90	5,955
Total ...	17,273

The comparison of above figures shews a profit of Rs. 14,114.

During the year large number of trees have been cut down along Kanjrum escape and New Main Line for fuel purposes at the same time giving the New Main Line plantations a very necessary thinning. On right bank from Indri to Kheri the thinning has yet to be done.

The Sirsa Branch staff has cut down kikar trees on old bends along old Canal from Indri for 3 or 4 miles down, also along Indri Singhva cut.

Large number of shisham trees have been cut from old Canal between Mayne Sahib's Bridge and Kambohpura village boundary for making cribs for falls.

As far as possible, the trees have been cut from lands which will be surrendered so as to leave them culturable.

A large number of trees have been cut along Butana Canal from Pathri to Gangana, which were growing along the water's edge, as it was necessary to remove them when clearing the Canal to proper section. These are chiefly tun logs, and have been brought on stock.

Count of trees.—Statement accompanies.

DELHI DIVISION, WESTERN JUMNA CANAL.

During the last three years trees have been planted out in lines on the left bank of the New Delhi Branch between Munak and Rer, between Baoli and Naraina and between Khubra and Kailana. Trees were also planted on both banks of the Canal for some distance up and down stream of the locks, in order that they might have the advantage of the protection of the lock establishment. The trees so planted were chiefly shisham and country mangoes. The Bhinjol, Naraina, Nilanthi and Silana compounds have been planted out with trees, chiefly fruit trees, mango, apple, peach and orange; mango trees were grafted at Saragthal, Noltha and Gangatoli, and gaps in the mango plantation were filled up. Eighty-six date palms have been planted out at Siraspur, Saragthal, Naraina, Bhinjol and Kakroi.

Various plots on the New Delhi Branch were taken up for nurseries with good result. Nurseries have also been sown at Serai Rohilla Khan, Gangatoli, Chota Thana Kakroi, Israna and Bhinjol,

About 30 acres of spoil below Jua were sown with kikar seed, but these sowings failed. Kikar seed sown in other places to fill up gaps in spoil plantations germinated fairly well. Very extensive damage has been done to timber trees and saplings, and the wood cages made to protect the latter by a number of fires. The villagers in this part have a way of firing jungle without any discrimination. With a strong breeze, the fire gets beyond their control, and it often spreads to the Canal plantations, causing great damage.

The number of different species of trees counted is as below :—

	1889-90.	1888-89.	1887-88.
Shisham	27,296	29,641	28,259
Tun	3,495	3,913	3,626
Kikar	55,599	62,919	55,075
Mangoes	2,657	2,243	2,025
Miscellaneous	44,822	53,959	51,328
Total ...	133,869	152,675	140,313

Establishment.—The supervision of the plantation work was done by the subordinates in charge of the several sections and no special foresters are employed, but malis and beldars are employed where required.

Financial Results.—The following statement shews the income :—

	1889-90.	1888-89.	1887-88.
Sale of timber and fuel	4,421	4,750	10,805
Do. fruits	1,514	352	1,117
Do. grass	938	751	594
Miscellaneous	25	20	...
Total ...	6,898	5,873	12,516

The expenditure during the last three years is as follows :—

	1889-90.	1888-89.	1887-88.
Maintenance	4,234	2,761	2,143
Extension of avenues	212	197	135
Total ...	4,446	2,958	2,278

FEROZEPUR DIVISION, SIRHIND CANAL.

I.—Rainfall.—The rainfall varies considerably in this District, from 18 to 20 inches average annually, in the upper, to 5 to 7 inches only in the lower portion of the division. During the years under review, the rainfall may be regarded as having been about the average in amount, the season 1888-89 receiving the greatest fall. But as even in the best years the rainfall is scanty and precarious, no dependence is now placed on it for raising plantations; and operations are started only where Canal water is present, and irrigation can be employed.

II.—Nurseries.—At the beginning of the triennial period, a number of small nurseries totalling 16·3 acres in all were maintained, they were scattered along the lines of channel in small plots, and supplied young plants, principally shisham for transplanting into chauki compounds, and along the bridge ramps. This work of transplanting is not now proceeded with, the chauki compounds being well supplied, while the attempt to grow avenues along the long bridge ramps has ben abandoned for the present. Special measures are therefore not now considered to be necessary, and the plots have been gradually given up.

At the present time there is only one small nursery of 1¼ acres retained at Teona on the Bhatinda Branch. Trees for transplanting purposes can be obtained in numbers by thinnings from the young plantations growing up on the spoil and outer Canal land.

III.—Plantations.—The operations carried on along the spoil land have, previous to the year 1889-90, been entered under the head of groves. In the returns for this last year, the whole area has been transferred to the new head plantations, and only areas of chauki compounds retained under the designation groves.

In 1887-88, there was no reduction in expenditure, and a good progress in extensions was consequently obtained. But in the last two years funds were allotted for maintaining existing plantations only, and the means for carrying out extensions were therefore curtailed. A certain amount of new work was however done, in addition to improvement and filling in blanks of old plantations in both years, and more particularly in that just expired.

The net results at the end of the period are an extension of 469 acres of plantations along the Canal spoil and in the Abohar Reservoir. The whole is well established and the trees very promising, and in most places growing thickly.

The sites where extensions of plantations were arranged for are the following :—

Sutlej Navigation Channel.—From mile 15 to 18 left bank irrigated from the Dhulkot Rajbaha. The land is mostly high in the first mile or so, and an avenue of trees has been planted along the water-course and side of Canal road, but portions of spoil land in the lower length will eventually be sown.

From mile 19 *to* 21 *left bank, irrigated from mill channel.*—At present also mainly avenue trees, though plantations will have to be eventually raised.

From mile 28 *to* 30 *left bank, irrigated from the Canal.*—Similar to the above, and but lately started, and requires developement equally with the others.

Some of the artificial islands formed in the basins of locks have been planted out, and the trees are flourishing well and are able to draw moisture for themselves from the water flowing by.

Abohar Branch.—A young plantation. On left bank started in the previous period between miles 51 and 53 has been extended and improved ; the trees are thriving, and a very valuable plantation being formed.

A plantation on left bank between miles 61 and 63 is watered by a stream wheel fixed in the Canal, the land being too high-lying to be irrigated by flow from any irrigation channel.

Plantations on both banks between miles 66 and 67 and miles 70 and 71, are irrigated from outlets fixed in the ends of silting reaches.

A second stream wheel has been fixed in the Canal in mile 77 to water trees in the Dhaipi chouki compound and the mango garden there, and also to raise a plantation over a mile length of spoil land. The results of the working of this stream wheel are very satisfactory, and the trees are growing up vigorously.

A very promising and valuable plantation of more than 200 acres in extent has been formed in the Abohar Reservoir, the trees having been grown from seed *in situ* by the side of longitudinal trenches, 20 feet apart and 200 feet long, and kept well watered. This plantation will eventually be extended to more than twice its present area.

Bhatinda Branch.—The results of plantation operations on this Branch have been most satisfactory, and the success startling since the provision of arrangements for flow irrigation. As the attempt to raise trees dependent upon the precarious rainfall had proved a complete failure, two large irrigating channels were first made, 10 miles long, each along the boundary road on both banks, and supplied with water from the Rajbaha and fall above. The 10 miles length of Canal spoil on each bank and one mile left bank above the fall are being thickly covered with trees ; many of them tall and well grown, though there are many blanks in places which will require attention. A thick kikar fence has been grown along the edge of the channels to prevent incursions of cattle.

In 1889-90, a similar plantation watered from the Bhatinda Minor was started between miles 78 and 81, but this plantation requires further development.

The kind of seed mostly sown in this division is shisham.

IV.—Groves.—All chauki compounds some 32 innumber have now been planted out, 4 being treated in the last three years. Where irrigation has been provided, fine groves are being produced, but where the land is too high to be irrigated and hand watering has to be resorted to, the trees continue stunted and do not thrive.

V.—Avenues.—The net result of the three years' working is shewn on the return as an increase of nearly 43 miles. The avenues have been laid out along the Canals and certain distributaries. Of course the trees are in many places still small, and blanks have to be refilled.

VI.—Income.—Income is derived from the sale of thinnings and loppings of plantations of sarkanda grass growing along water's edge, and grazing cattle on banks and in the Reservoir.

Considerable thinnings were carried out in the last two years, but the resulting fuel is not of great value from such young plantations. A difficulty is also experienced in selling the fuel, willing purchasers being found only on the south-west channel near Ferozepur. No doubt where the quantity and value of the fuel improve, purchasers will come forward more willingly.

A fair revenue is derived from grazing of cattle in the Abohar Reservoir, a monthly charge per head being levied for the privilege.

VII.—Expenditure.—The expenditure is, and will necessarily be for some years, to come considerably in excess of the income obtainable. In the last three years the expenditure has been mostly incurred in maintenance of existing plantations.

LUDHIANA DIVISION, SUTLEJ CANAL.

Main Line.

The expenditure and receipts from all sources during the three years was as follows :—

		1887-88.	1888-89.	1889-90.	Total.
Receipts	Rs.	5,788	10,433	11,896	28,117
Expenditure ...	„	5,741	6,917	2,423	15,081

The following comparative statement shews the receipts and expenditure on all heads for the three years :—

Receipts.

	Timber.	Grass.	Fruit.	Fuel.	Thinning	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1887-88 ...	...	3,596	2,118	6	68	5,788
1888-89 ...	44	3,221	7,097	...	71	10,433
1889-90 ...	6	4,099	7,525	...	266	11,896
Total ...	50	10,916	16,740	6	405	28,117

Expenditure.

	Ornamental garden.	Nurseries.	Maintenance & repairs.	Extension of avenues and groves.	Afforestation of waste land.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1887-88 ...	...	158	5,121	462	...	5,741
1888-89 ...	...	190	6,409	318	...	6,917
1889-90 ...	...	176	1,733	514	...	2,423
Total ...	...	524	13,263	1,298	...	15,081

There is a profit of Rs. 12,810 during the three years. The cost of maintenance and repairs has fallen off considerably during the year 1889-90.

A large amount of wood has been cut and used on canal works and for supplying the workshop which has received wood and charcoal from the plantations during 1888 and 1890, which has caused a considerable increase in receipts for three years—

	1887-88.	1888-89.	1889-90.
Rupar	33·50	41·05	30·07
Chamkour	34·25	36·50	30·53

In 1887 the rain commenced on the 4th June and was abnormal during July and August, the reading being, Rupar 5·50 and Chamkour 3·78 on 11th July 1887.

In 1888 the rain commenced on the 1st May and was abnormal during September, the reading being, Rupar 8·00 on 21st September, and Chamkour 6·57 on 20th September.

The rains for 1889 commenced on 26th June, and were heavy during July and August as per statement below, and the maximum readings for any one date were, Rupar 4·10 on 19th August, and Chamkour 4·20 on 3rd July 1889.

The rain ceased at the end of August, and very little has fallen since—

RAINFALL.

Date.	JULY 1889.		AUGUST 1889.	
	Rupar.	Chamkour.	Rupar.	Chamkour.
1	...	...	...	...
2	...	...	...	...
3	2·30	4·20	...	...
4	...	...	...	...
5	...	...	...	...
6	...	...	...	...
7	3·60	...	...	...
8	...	...	...	...
9	...	...	...	...
10	...	...	3·15	...
11	...	1·48	...	...
12	...	...	...	...
13	...	...	...	...
14	...	...	...	...
15	...	...	...	...
16	...	...	...	...
17	1·35	...	1.00	...
18	...	...	...	...
19	...	3·00	4·10	1·40
20	...	...	...	...
21	1·45	...	...	1·80
22	...	...	...	...
23	...	...	...	...
24	...	...	...	...
25	...	...	...	...
26	...	...	...	...
27	...	...	...	...
28	...	...	...	...
29	...	...	...	...
30	...	...	...	...
31	1·13	...	...	...

Sowing.—During the three years 1887 to 1890, 83·15 acres were resown on spoil banks and high patrol road slopes. The sowing was done just before and during the early part of the rains, and the seeds in most parts germinated fully; but at present there are scarcely any of the seedlings remaining. The parts resown are the most barren and sandy on the canal banks. Some parts of the spoil which were destitute of trees were planted out with young trees, and this plan seems to have succeeded best as most of the trees are now alive. The line trees planted out were kept protected from cattle and seem progressing.

Thinning and felling.—Thinning was carried out in nearly the whole of the canal banks and on Siswan and Budki Torrents, as a great deal of firewood was required for burning surkhi, bricks and lime and for workshop Sub-division; 2,55,205 cubic feet firewood was collected during the three years, valued Rs. 17,014.

Nurseries.—Some mango, jaman and shisham seeds were sown at Rupar and Rampur, and are in a progressing condition. Some of the old seedlings have been transplanted.

Fencing.—No new wire fencing has been done, but the one at Rupar has been thoroughly repaired. Fencing with thorns was done to all the young trees planted in the avenues.

COMBINED BRANCH.

The expenditure and receipts during the three years was as follows:—

		1887-88.	1888-89.	1889-90.	Total.
Receipts	Rs.	76	82	108	266
Expenditure	„	63	59	68	190

Rainfall.—The rainfall at Manpur was in 1887-88, 19·96, 1888-89, 26·0 and 1889-90, 17·53.

The greatest fall of rain in 1887-88 was on 5th August 1887, when 5·43 was registered, and in 1888-89 on the 20th September 1888, was registered 4·78.

Sowing.—During the years 1887-88 and 1889-90, 4 acres were sown with kikar seed of which about 2 acres are doing well. No sowing was done during 1887-88, of the 2 acres sown in 1887-88, seed sown in July germinated at the time, but died off later on.

Transplanting.—No transplanting was done during 1887-88 during 1888-89 and 1889-90, about 750 trees were planted out, and a fair avenue exists on left bank of canal.

ABOHAR BRANCH.

Financial.—The expenditure and receipts for the three years was as follows:—

		1887-88.	1888-89.	1889-90.	Total.
Receipts	Rs.	890	1,192	2,296	4,378
Expenditure	„	2,078	944	1,053	4 075

The high expenditure during 1887-88 was due to the extensive sowings.

The small receipts for 1887-88 are most probably due to the grazing leases and grass cutting being auctioned late in the year.

Sowing.—During the three years, 350 acres were sown, and the seed germinated fairly well, the seed mostly sown being in drills. In many parts of the banks the seedlings of former years' sowings are growing well.

Transplanting.—The Katany bamboo from Bul and Akalgarh nurseries were planted out in July and August 1887, and are doing well but grow slowly. Bridge ramps, chouki compound and spoil banks were planted with trees. Plantation was commenced at Akalgarh in 1885-86. The jamans and jamoyas planted in it are living but do not flourish. The site is high and the soil hard. A plantation was commenced during 1887-88 at Akhora, and both of the plantations have been added to, and are doing well.

Thinning and felling.—Very little thinning has been done on this Branch; only in places where trees were very thick, some were cut down.

Watering.—Trees on bridge ramps and Akalgarh plantation are hand watered; stream wheels have been erected at 3 Rajbaha choukies, and are working well.

Nurseries.—Nurseries were maintained in Canal chouki compounds, but the area now is small. The principal trees that were in the nurseries were mangoes, jaman, jamoya and phulai.

Fencing.—The Akhora plantation has been fenced with posts and wire, a portion of the 19th mile was also fenced, on which young trees were planted.

Prospective.—During the year 1890-91 sowing will be limited to abondoned silting reaches and parts where there is any hope of seed germinating.

BHATTINDA BRANCH.

Financial.—The expenditure and receipts for the three years were as follows:—

		1887-88.	1888-89.	1889-90.	Total.
Expenditure	Rs.	2,059	2,094	2,371	6,524
Receipts	„	542	1,520	2,508	4,570

The operations on this branch being new, the income has been small, but it is increasing yearly as the grass on banks spring up, and more thinning is done.

Rainfall.—The following statement shows the rainfall at Dadahur and Sehna for the three years:—

	1887-88.	1888-89.	1889-90.
Dadahur	25·90	16·40	9·43
Sehna	14·60	25·60	8·47

The greatest fall on any one day was 5·00 on the 5th July 1888 and 3·50 on 7th July 1889 at Sehna.

Sowing.—During the years 1887-90, about 440 acres were sown, of which about 50 acres were successful. Rats and moles destroyed the seedlings. Kikar seed was sown in drills. A pipe was fixed in the Canal at mile 44, and a channel was constructed to convey water to seed sowa from miles 45 to 49. Some seeds were sown in Dadahur and Jaghera choukies and are doing well.

Transplanting.—Some of the bridge ramps and gaps in avenues were planted with trees from nurseries. Mourh and Wajidki chouki compounds were also planted with trees and are doing fairly well.

Nurseries.—The nurseries in chouki compounds are doing fairly well. The principal trees grown are shisham, tun and a few jaman.

Watering.—Iron pipes were put in at the notches of falls 12 and 32, and Jaghera and Dadahur compounds are watered by flow. Gahil and Sehna Chouki compounds, and young trees on ramps are watered by hand. Mourh Chouki compounds get water by a stream wheel, and the remaining compounds by flow. Stream wheels will be used where practicable.

Thinning and felling.—Some thinning was done to the first 26 miles, but no felling was found necessary.

PATIALA DIVISION SIRHIND CANAL.

Rainfall.—It will be observed that there has been a steady decrease in the rainfall year by year during the three years under review. As successful tree-planting depends so very much on the rainfall, deficiency in which cannot be fully met artificially, the consequence of a deficiency will surely be found in the results.

Under head "Nurseries" it will be seen from the statement that the 8½ acres of 1887-88 were extended to 19 acres nearly in 1888-89, and 21·3 acres in 1889-90. In the feeder line nearly 8 acres have been transferred to "Groves," this transfer of nurseries to groves will begin to get larger every year, as the nurseries grow up and are thinned out for transplanting, leaving the remaining large plants to stand as groves.

Under head plantations the large increase to area planted during the year is due to a transfer of a considerable area of groves to plantation, owing to the new definition of groves and plantation given in the printed foot notes at bottom of statements.

The progress on plantation as now defined during the two previous years cannot be given, as this is the first year it has been separately dealt with.

Under head "Groves," the discrepancy in the area stocked with live plants in the previous years, and that shewn in the year 1889-90 is due also to the change in nomenclature of classification, the areas given in column 6 of the statement may be accepted as the actual area under groves at close of the year 1889-90. Of the 1,172 acres entered as failures during the year, 517 are direct transfers to plantations and the rest of the failures are due to deficient rainfall.

Under head "Avenues," the large percentage of failures 36½ miles out of 108 miles is due principally to failures of the previous years not having been recorded in the Kotla Branch. Otherwise the increase to the length under avenues would have been nearly 20 miles.

Statement No. VI.—Income.—The gross income for the three years under review is Rs. 11,216, and is composed of steadily increasing amounts each year, which shows a net return of over 27 per cent. of the expenditure for the same period.

Statement No. VII shews the expenditure under all heads; this has been difficult to distribute for the year 1887-88 and 1888-89, hence the details cannot be compared with those of the year 1889-90. There is a marked increase in the expenditure during the last two years as compared with the year previous, this is probably due to the Canal works being more complete, and more time being available for this work.

On the whole, the arboriculture operations in this division appear to have been very successful, except in positions where "Kalar" or Reh soil exist, and in some of the "drifting sand" tracts which the Branches traverse; in the latter, it is difficult to prevent the young transplants from being submerged in the drift-sand. Attempts to arrest the sand drifts by planting rows of "Kanah" grass across the line of prevailing winds, have been more or less successful.

A good deal of useful work has been done by the stream wheels in the Canal, they require very little attention and are constantly at work. Of course these cannot be used on the Patiala Navigation Channel or the Choa Branch where the velocity of the water is so very small.

A tracing of the whole division on a scale of 8 miles to one inch accompanies this report; it shows graphically the various stages in which arboriculture progress has been made on the Feeder Lines Branches and Patiala Navigation Channel.

CHENAB CANAL DIVISION.

Operations had scarcely been commenced in the beginning of 1887 as water had not been let into the canal. Nurseries had, however, been established to a limited extent.

The only trees dependent on rain for water are those in the plantations on the spoil banks, and they have thrived though there have been long rainless intervals. The rainfall of the cold weather months of 1887-88 and 1889-90 was very slight.

Nurseries.

The spoil banks of the supply channel, main line, escape and portion of Kot Nikka Branch were planted; 183 acres are now well stocked mostly with shisham. Excepting the Kot Nikka Branch, 70 acres remain, on which further attempts to raise plantations must be made. The failure on this area is partly due to cattle trespass and partly to poorness of soil. The area on which afforestation has been found to be impossible is omitted.

An avenue of trees has been planted along the whole of the Kot Nikka Branch (26 miles). Along 8 miles of this there are four lines, and on the remaining portion one line. Many of these trees are now 10 feet high. They are mostly shisham.

All have been carefully tended and watered from the canal.

Young trees in one line have been recently planted out on the supply channel. Parts of main line and Hafizabad Branch and the upper portion of the Rakh Branch.

Most of the chouki compounds on the open part of the canal have had trees planted in them, and are consequently represented in the returns as groves. In some, especially where officers have occupied the Bungalows as temporary quarters during the construction of the canal, there are fine trees of various ornamental and useful kinds.

Establishment and Supervision.

A Forester was kept at Rs. 50 a month, and that is the only expense coming strictly under the head of establishment. In other respects the supervision has been entirely that of the officers and subordinates of the division.

Financial results.

There has been no income as yet; the canal is only partially completed; and there has been no growth of trees or grass from which any income could be derived. In fact the local need has yet to be created, for this produce, the district being sparcely inhabited.

SWAT RIVER CANAL DIVISION.

Since the submission of the last trieninal report considerable progress has been made, and as a rule the trees are growing well. The nurseries of which 55 acres were reported in 1887 as having been sown, were in the first instance utilized for obtaining line trees, but those which were left have now grown too big to remove, and the whole area has been transferred to groves.

Some of the most successful avenues have, as noticed in last trieninal report, been those grown from seed sown on one side of a water-course in which a stream of water is kept almost constantly running, and an effort is now being made to complete the avenues along all the channels of the canal system in this manner. Temporary outlets have been put into the distributary channels, small water-courses dug on both boundaries of the canal land, and shisham seed has been sown, a good deal of which has germinated. As quite correctly remarked in the previous report, only a portion of such sowings will come to maturity as it is impossible to protect such a long length, but the cost is small and the outlets and water-courses once constructed, any seed that fails can be replaced for almost nothing.

The main result of the three years may be summarized as follows:—

89 acres of groves well grown and above the likelihood of damage.

9 „ recently sown, hence only just sprouting.

About 30 miles of canal or road have been provided with good avenues safe from cattle, &c.

15·73 miles with young trees which still require a good deal of care and attention

50·0 „ have been sown during March 1890 in the manner described *ante*.

Shisham and mulberry both answer well and have been most largely sown.

The total expenditure in the last three years has been Rs. 16,986, and the income only Rs. 105. No considerable income could of course be expected for some time; but Executive Engineer doubts if it will ever be great although the indirect advantages to the District may be enormous.

PROVINCIAL DIVISIONS.

PESHAWAR PROVINCIAL DIVISIONS.

Rainfall.—Hazara District.—It will be noted that the rainfall during the three years has been low, especially in the last year as there was no snowfall during the winter 1889-90.

Peshawar District.—In this District the decrease in rainfall is still more marked, the total fall in 1889-90 being only 6·46 inches against an average of 13·24 in former years.

Nurseries.—But little work has been done in the formation of nurseries, the total land taken up for nurseries, being only (1·70—0·00)=1·70 acres and (0·2—0·012)=0·188 acres in the Hazara and Peshawar Districts respectively.

Plantations.—No attempt is made to grow trees for producing timber, the endeavours of the Public Works Department being confined to the extension and maintenance of roadside avenues.

Groves.—No groves have been formed, as all the trees that are produced in the nurseries are planted out on the roadsides, as soon as they are considered to be strong enough.

Avenues.—The total increase in length of roadside avenues during the three years amounted to (113·77—97·90)=15·87 miles and (126·45—89·91)=36·54 miles in the Hazara and Peshawar Districts respectively. Taking the distance between the trees at 30 feet, this represents $\frac{(15·87-36·54)-52·80}{30}$=9,224 trees; but many of these although apparently fairly established, will, it is feared, not reach maturity, as it is found very difficult to preserve many of the trees owing to their isolated positions. Cattle, goats and the villagers themselves, combine to render the task anything but an easy one. To keep up an efficient supervision would necessitate very heavy expenditure, and it seems that the only way to secure success is, to make the villagers through whose boundaries the roads pass, responsible for the trees planted within their boundaries—

Effective fencing on a large scale is out of the question.

Expenditure.—The gross expenditure on arboriculture for the three years under review amounts to Rs. 20,537, and income Rs. 2,559 (which however includes sale of grass) a net expenditure of Rs. 17,978. The cost per tree amounts to Rs. $\frac{17,978}{9,224}$ or nearly Rs. 2.

RAWALPINDI PROVINCIAL DIVISION.

Jhelum District.

Avenues.—About 11½ miles of single lines of avenues of shisham trees have been planted on the Lahore and Peshawar road in this District during the last three years with success. After another year most of these trees will not require tending.

Groves.—The total area of groves is 91·90 acres, of which 75·01 acres are stocked with trees. Satisfactory progress has not been made on this sub-head for want of saplings; 4·13 acres were planted with young trees during last year, nothing having been done in the two previous years.

Nurseries.—To the extent of 0·44 acres have been established during the last two years in suitable localities on the Lahore and Peshawar road. Arboriculture operations could not be carried on as deired during last year for want of well stocked nurseries on roadsides; this want has now been supplied.

Revenue realized.—During the last three years from sale of grass, fallen and dry trees, Rs. 1,692 was realized.

Expenditure incurred.—During the pastthree years, expenditure amounted to Rs. 4,292. A large section of the Lahore and Peshawar road in this District passes through broken and hilly country, where few trees exist on roadside, hence the income has not covered the expenditure, and more especially as tree-planting and tending has been more rigorously prosecuted during the past year (1889) than formerly, new lines of avenues having been planted out, nurseries established, &c.

Gujrat District.

Avenues.—Satisfactory progress was not made under this sub-head during the past three years 1887-88 and 1889, as only one mile of road has been provided with an avenue of single lines of shisham trees, and this was done last year. It is hoped better progress will be made during the next three years, as nurseries have now been established in rest-house compounds and on roadside.

Groves.—Out of a total area of 136·71 acres set apart for this purpose, only 74·58 acres are stocked with trees. No progress was made during the last three years in filling in gaps and open areas in groves.

Nurseries have been established in Rest-house compounds and suitable places at roadsides during the past year, there having been none previously. The present area of nurseries is 0·36 acres.

Revenue realized from sale of grass, fallen and dry trees during the last three years, amounts to Rs. 8,060, *viz.*, Rs. 2,796 in 1887-88; Rs. 2,911 in 1888-89, and Rs. 2,353 in 1889-90; many kikar trees are felled yearly by heavy winds; kiker trees are plentiful on roadside.

Expenditure incurred during the corresponding periods amounts to Rs. 707, Rs. 730 and Rs 776 respectively.

Lahore and Peshawar road—Avenues.—The Rawalpindi Sub-division begins from mile post 133 near Bishandaur bridge, and runs up through ravines and broken ground to mile 137½, and along this length; very few trees can be grown for want of water; where water is obtainable from ponds, trees have been planted this year and a few last year, particularly in miles 135 and 136 all of shisham, and these are flourishing.

There is a good line of full grown kikar trees in miles 139,140 and 141. Young trees have been planted in miles 142, 145 and 146, all shisham, and are doing well; water is obtainable close at hand.

There are no more young trees on the road till mile No. 150 is reached, where again trees have been planted and are growing.

Some trees were planted also in miles 152,154 and 158, and these are flourishing.

From mile 160 to 166 young trees have been planted where the soil is suitable and water is procurable, particularly in miles 164 and 165 where there is a double line of trees on both sides of the road for about half a mile.

From mile 167 to 172 the road passes through the Rawalpindi Cantonments and is lined with a very fine avenue of shisham trees in places in double lines on each side with very few gaps.

Beyond the Cantonment, trees have been planted in miles 174, 177, 183, 186, 192, 195, 196, 197, 198, 199, 200, 201, 209, 210, 214, 215, 217, 218 and 221, and most of the trees are shisham; in a few places the mulberry has been tried but not successfully.

General.—The young trees are in good condition. In many places water was obtained with difficulty during the hot months of each year, and great attention and care is required to produce trees on this section.

The temporary fencings of brushwood and branches of trees placed round young trees have often been stolen, burnt and even blown away by storms, and much difficulty has been experienced in protecting the young plants from camels, goats, &c.

Rats have been found to be great enemies to the young trees. They have destroyed many young trees by eating the tender roots.

Rawalpindi and Barracas road.—Distance 14 miles. The road is provided with a handsome avenue of full grown shisham trees in double and single lines all along, with but few gaps, which have now been filled up and the young plants promise well.

Lawrancepur road.—This road links the Railway station of Lawrencepur to the Lahore and Peshawar road, distance about ½ mile. It was planted last year with a single line of shisham trees on each side and the plants are flourishing.

Huzro Huttee road.—Distance 4 miles. This is a feeder road to the North-West Railway, and it was taken over by the Public Works Department only three years ago The first two miles from Huzro are here and there provided with big Tamarisk (farash) trees. The gaps in the avenue have now been filled in with young shisham trees which are flourishing.

Gujar Khan link road. (Road from L and P Road to Railway Station at Gujar Khan).—Distance about 2,000 feet provided with kikar trees in single line on each side, all full grown.

Turnoul and Khushalghar road.—Length about 66 miles. There are no trees along the whole length. Shisham trees have this year been planted in miles 180, 182, 190 and 191 and are doing well.

Groves.—Trees have been planted during the last three years on the land set apart for roadside groves in miles 135, 137, 142, 149, 152 and 161 and in almost all the compounds attached to the Public Works Rest-houses except at Attock and Haroo; the trees are getting on well.

In dry portions it has been noticed that the young plants often die down and shoot out afresh from the roots. This may be due to want of care in transplanting.

Every care is being taken to fill in and well stock all land reserved for groves. This was neglected very much in the past.

Nurseries have only lately been started in this Sub-division. Endeavours are now being made to establish these at convenient places.

Nurseries have been prepared in the compounds of the Rest-houses at Missa-Daira Chehari, Lobani, Sang Janee, Margalla fountain, Hussanabdal, Gondal and Jund, during the past year.

These are apparently sufficient to supply about 10,000 young trees for transplanting in two years time : all the nurseries have been sown with shisham.

Revenue.—The total revenue realized during the last three years is Rs. 3,633. The total expenditure incurred during the last three years is Rs. 6,609.

KOHAT PROVINCIAL DIVISION.

Rainfall.—For purposes of arrangement the Kohat District has been classed as very dry, and a reference to the Rainfall Return will show that 7″·5, 3″·7, and 18″·6 are given as the inches of rainfall for the years under review. These amounts would perhaps be still further reduced if the rainfall beyond the limits of Kohat town were recorded.

At Khushalghar rain very seldom falls, and the same may be said of Juli 53 miles from Kohat on the Bunnu road

Nurseries.—Endeavours have been made to establish nurseries in all miles in which trees can be got to grow, the areas so set apart being protected by wire fencing ; seventeen of the 31 miles of the Kohat-Khushalghar road can be treated in this way, but as water is scarce, the seedlings are for the most part dependent on rain, and during years of drought great damage is done.

The Kohat-Bunnu road has been newly constructed, having been completed in March 1890, and arboricultural operations were suspended on this road while it was in progress.

A number of young plants were brought up from Saharunpore gardens on trial, but they failed, as during the early part of the year there was a failure of the rains. Large nurseries have been established at Tagh, 3 miles from Kohat on the Khushalghar road, at Kohat, and at Chichana and Banda on the Bannu road, and at the sites of the major bridges along the whole road from Khushalghar to Latammar. The result is that there were in 1887, 2 acres of nurseries, and in 1890 there are 6·37 acres.

Groves.—Groves have been established in suitable places such as all Department Public Works Rest-houses and serais, and where there are tanks along the road. The cuttings of the farash planted at Kurrum and Jali have proved a success. The result is that now there are 2·44 acres set apart as groves against *nil* in 1887.

Avenues.—An experiment which has been successful has been made this year with the planting out of trees in avenues. A great deal of trouble has always been experienced in protecting young trees 2 and 3 feet high from goats. Arrangements are now made to plant out trees which are between 6 and 8 feet high, and this has been found successful. Trees of this height planted along the roadside and round tanks last February are now quite independent and add to the features of the country.

In 1887 there were 9·39 miles of avenues, and in 1890 there are 15·44 miles. It may not be foreign to the subject to mention that quick hedges of cactus have been introduced into the District and the plant appears to thrive.

They have been put at the toes of high banks, and when acclimatised, can be planted out for the protection of nurseries and groves along the road.

Camel thorn has also been introduced as a quick hedge, and if successful, it is intended to plant it along the sides of the road where there are high banks. Goats will not touch it. It grows thickly and is strong and hardy requiring little rain.

The *pinus longifolia* was introduced last February, and the young plants (at Raisan on the Kohat Thull road) are thriving. The trees which appear to suit the District are—

1.	Acacia Arabia	Babul.
2.	Dalbergia Sissu	Shisham.
3.	Mulberry	Tut.
4.	Tamarisk Indica	Farash.
5.	Ficus Religiosa	Pipul.
6.	„ Indica	Banyan.
7.	Acacia Modesta	Phulai.

Income and Expenditure.—The income on the sale of branches of trees, grass from preserved areas, &c., for 1389-90, is Rs. 43-14-0, and the expenditure on arboricultural operations for the past three years is Rs. 1,007.

GUJRANWALA PROVINCIAL DIVISION.

The only roads under the Public Works Department in Gujranwala executive charge on which trees are planted are—

(1). Lahore and Peshawar road, from mile 22 to mile 63 in Gujranwala District, *viz*, about 41 miles ; and.

(2). Wazirabad and Sialkot road in Gujranwala District about 5¼ miles.

The Lahore and Peshawar road has got avenues and groves, and the Graphic statement or map which accompanies herewith, shows the miles which are fully and partially planted with trees. In 1887-88, young trees were planted in 15 miles of the

road along the outer edge of the berms on sides of the metalled portion, and for the last three years they have been watered, protected with bushes and otherwise taken care of by the bhistis employed for the purpose. The plants have generally grown satisfactorily, and there have been but slight failures due to the plants being too tender in some portions of the road when they were first planted. Generally good healthy plants, not less than two years old were planted and they are all now in a good state. A list of young trees between 3 and 4 years old now standing on the roadside is annexed herewith for reference. The plants are generally shisham and a small number of them are kikar. The graphic plan will show that young trees are wanted in gaps of several other miles, but as the establishment for plantations has been limited, no efforts were made to plant any trees in these miles.

In 1889-90, nurseries of shisham were planted in the compounds of the Rest-houses at Wazirabad, Gakkhar and Dhillanwalla, and after two years more the plants will be transplanted on sides of the road where the gaps alluded to above have yet to be filled up.

4. In two miles of the Sialkot and Wazirabad road, some young trees were also planted in 1887-88, and they have since been taken care of, but they have not grown so satisfactorily as those on the Lahore and Peshawar road. The cause of the failure is the same as on the Lahore and Peshawar road, *viz*: Sufficiently grown up good and healthy seedlings were not planted, and the small plants about a foot high are sure to die when taken out of the nurseries and planted singly.

5. No ornamental trees or gardens were planted, but some fruit trees were planted in the compound of the Wazirabad Rest-house in 1887-88 and 1888-89, and they have grown well.

JULLUNDUR PROVINCIAL DIVISION.

Rainfall.—The rainfall during the two years is shown in statement No. I. It will be observed that while the average of the last three years in the Jullundur, Kangra, Ludiana and Ferozepur Districts was, respectively, 23·25, 125·03, 30·42 and 22·42 inches, the fall during the period under report did not in any year reach that point; the last year it was conspicuously low in the five Districts of this division, *i. e.*, Jullundur, Hoshiarpur, Kangra, Ludhiana and Ferozepur being, respectively, 17·75, 29·64, 122·50, 21·29 and 16·91 inches, against 28·25, 35·04, 124·55, 31·39 and 22·31 inches in the previous year. The fall during the winter months was comparatively low; in the rainy season also it was much below the average. The rainfall has been taken from the *Punjab Gazettes*.

Nurseries.—There are six nurseries in this division having an aggregate area of 3·20 acres as will be seen from statement No. II. These nurseries are not sufficient for the requirements of the division, as trees had to be taken from the Civil authorities for planting along the Provincial lines of road.

Plantations.—There are no plantations in this division.

Groves.—There are no groves in this division.

Avenues.—There are the following roads in this division:—

I.—Grand Trunk Road from Khanna to left bank of Beas—87 miles.

II.—Jullundur and Hoshiarpur road from Jullundur to the point where Jullundur District towards Hoshiarpur terminates,—16 miles.

III.—Hoshiarpur-Dharmsala road—80 miles. This road runs through the hills for the most part, and only 8·19 miles are suitable for avenues, *vide* statement No. V.

IV.—Kangra Valley Cart road including branch road—67 miles. This road also runs through the hills, but as a rule through better country than the foregoing. There are 60·63 miles suitable for avenues, and of these 24·39 are planted, *vide* statement No. V.

V.—Ludhiana-Ferozepur road—81 miles.

		Miles.
Of No.	I	13·99
" "	II	·95
" "	III	·57
" "	IV	1·00
" "	V	9·22

were planted during the year, and 43·32, 12·39, 6·91, 22·86 and 15·17 miles, respectively, were planted previously; the remaining portions will be finished during the ensuing year. The trees planted are shisham, mulberry, kikar and toon.

Income.—The income from the several sub-heads of arboriculture realized and credited to Provincial receipts during the year, amounted to Rs. 6,853-15-7 against Rs. 5,594 and Rs. 6,749 in the two preceding years. The increase in income during the year under reference is due to better arrangements made for disposing of the road produce.

The net income during the past three years was—

		Rs.	A.	P.
1889-90	...	=6,853	15	7
1888-89	...	=5,594	0	0
1887-88	...	=6,479	0	0
Total	...	19,196	15	7

The average net income for same time was—

Rs. (6,398-15-10)-(3,694-3-10)=2,704-12-0.

Expenditure.—The total expenditure on the several sub-heads of arboriculture in the division amounts to Rs. 4,521-11-6 as compared with Rs. 2,812 and Rs. 3,749 in the two preceding years. The increase is chiefly due to extension of avenues and nurseries.

Maps of Districts.—The maps of the Jullundur, Hoshiarpur, Kangra, Ludhiana and Ferozepur Districts, showing the arboriculture operations as called for in paragraph 11 of the instructions for the preparation of the report, accompanying.

UMBALLA PROVINCIAL DIVISION.

Rainfall.—The statement No. I shows the rainfall during the three years. From this it would appear that the average of the last years in the Umballa and Karnal Districts was 35·42″ and 29·73,″ respectively, but the fall during the year under review did not reach that degree.

The last year it was low in both the Districts (Umballa and Karnal) of this division, being respectively 20·9″ and 23·74″ against 35·42″ and 29·73″ in the preceding years.

The fall throughout the winter months was apparently low, and it was much below the average during the rainy season also.

The rainfall has been taken from the *Punjab Gazettes.*

Nurseries.—The nurseries in this division (3 in number), comprising an area of 1·74 acres, *vide* statement No. II are inadequate to answer the requirements of the division. In order to meet the demands of the division concerning this sub-head, arrangements are being made to extend the nurseries.

Plantations.—There are no plantations in this division.

Groves.—There are no groves in this division.

Avenues.—The following roads are in this division :—

I.—Grand Trunk Road from 39 to 161 mile = 122·43 miles.

This road runs through Karnal and Umballa Districts. The following miles of this road being within the boundary of the Umballa Cantonment, are under the charge of Executive Engineer, Umballa Military Works Division:—2,337 rft. of mile 119, 120, 121, 122 and 1,251 rft. of mile 123 = 3·68 miles.

The failure of 8·70 miles is due to the following causes :—

		Miles.
1.	Actual failure for scarcity of rains	1·38
2.	Failure due to portion of road being given over for Delhi-Kalka Railway diversion	2·00
3.	Correction of entry in last year's statement	5·32
	Total failure ...	8·70

II.—Umballa and Kalka road from 4th to 38th mile = 34·63 miles, but the length of road suitable for avenues is 33·97 miles, as the aggregate width of Ghaggar river, Jhajjra and Sookna crossings which cross this road in miles 21½, 36½, 32½, respectively, is ·66 miles.

Income.—The sum of Rs. 7,506 against Rs. 3,787 and Rs. 2,454 in the two preceding years on account of sale proceeds of the dead and fallen trees. Grass and fruits of the roads under charge of this division, was received during the year under reference and credited to Provincial receipts.

The increase is due partly to the sale of trees on 2 miles of the Grand Trunk Road taken up by the Delhi and Kalka Railway, and partly to the better arrangements made for the sale of road produce.

The net income during the past three years was as below :—

		Rs
1889-90	...	7,506
1888-89	...	3,787
1887-88	...	2,454
Total	...	13,747

Expenditure.—The amount of Rs. 2,264 against Rs. 2,097 and Rs.1,791 in the previous years, was expended on the several items of arboriculture in this division. The increase is owing to the fact that the nurseries were extended which accounts for extra outlay.

Maps of Districts.—The maps of Umballa and Karnal Districts indicating the arboriculture operations as called for in para. 11 of the instructions for the preparation of the report are sent herewith.

DELHI PROVINCIAL DIVISION.

Rainfall.—The average rainfall for the Delhi District is 31·27 inches. That for the year under report was 23·75 inches, of which 22·90 inches fell between the 1st April and 30th September and 0·85 during the other half of the year. The result of this scanty rainfall is that the failures amongst avenues are larger, and the income from arboriculture is less than the average.

Nurseries.—There are two in the division with an aggregate area of ·074 acres. The reason for the small area devoted to nurseries is that owing to the District being a good forest one, it is easy to buy trees almost anywhere of a size suitable for planting out on the roadside at a cost of one anna each, and it would not be possible to grow them any cheaper than this in nurseries.

Plantation and groves.—There are no plantation or groves in this division.

There are the following roads in this division :—

I.—Grand Trunk Road from the Lahori gate of the city to mile 38.

II.—Delhi-Muthra road from the Delhi gate of the city to mile 28.

III.—Delhi-Sirsa road from the Teliwara bridge (over Okla Navigation Channel to mile 16).

IV.—Delhi-Gurgaon road which branches off from the Circular road at mile 1, and ends at the old "kos" pillar mile 16¾.

Avenues.—The length of avenues on these roads are shown below :—

GRAND TRUNK ROAD.

	Miles.
In Municipal charge	1·50
Unfit for avenues	0·50
Single avenue	7·69
Double do.	10·16
Unplanted	18·15
Total ...	38·00

DELHI-MUTHRA ROAD.

	Miles.
Single avenue	22·11
Double do.	*Nil.*
Unfit for avenues	1·00
Unplanted	4·89
Total ...	28·00

DELHI-SIRSA ROAD.

	Miles.
In Municipal charge	1·00
Unfit for avenues	1·05
Single avenue	9·30
Double do	2·15
Unplanted	2·50
Total ...	16·00

DELHI-GURGAON ROAD.

	Miles.
In Municipal charge	1·50
Unfit for avenues	1·75
Single avenues	12·00
Double do.	0·10
Unplanted	1·40
Total ...	16·75

In almost all cases the lengths shown as unfit for avenues are those where the road passes through a village or town, and there is no room for an avenue.

The lengths planted during the year were—

	Miles.
(*a*). Grand Trunk road	0·75
(*b*). Muthra road	0·35
(*c*). Sirsa road	0·44
(*d*). Gurgaon road	0·50
Total ...	2·04

On the other hand the lengths which failed were—

	Miles.
(*a*). Grand Trunk road	1·45
(*b*). Muthra road	0·76
(*c*). Sirsa road	0·50
(*d*). Gurgaon road	0·70
Total ...	3·41

The failures were due partly to storms of wind, but principally to the scarcity of water, and the ravages of white ants which attacked the kikar trees so severely as to strip them almost entirely of bark.

Income.—The average income from arboriculture for the past three years is Rs. 780. That for the year under the report was Rs. 751. Decrease being due to failure of grass.

Expenditure.—The average expenditure on arboriculture for the past three years was Rs. 1,387, while that for the year under reference was Rs. 1,749.

The excess is due to the extra establishment maintained.

DERA ISMAIL KHAN DIVISION.

To deal efficiently with this subject, it is necessary to first of all give a general idea of the difficulties which an officer of Public Works Department has, in general, and in this division in particular, to face in order to successfully maintain the avenues of young trees on the roadside. The first and the most important factor in achieving success in the arboricultural operations is the proper and timely supply of water. Where there is no supply of water other than wells and with bhisties only to carry water, it is but waste of money trying to plant avenues beyond a mile either side of wells.

And where canal water is available, the continued co-operation of officers having charge of this water, is most essential, otherwise a draught in one single hot weather may destroy whole avenues of young trees, on which considerable amount of care and money had, in years past, been spent.

The second and by no means less important thing is the protection of young trees from camels; the oxen and goats can however be prevented successfully from doing harm by providing *pilchi* or mud gabions round young trees. The ditch recommended round them may be useful against camels only where sufficient space is available. The co-operation of Civil Officers in this respect is, to a certain extent, most desirable. I can safely say from my experience of this in Dera Ghazi Khan and Dera Ismail Khan Districts, that the avenues of trees have considerably been thinned since they have been taken over from the civil authorities. In Dera Ghazi Khan District camels and oxen were pounded daily by dozens which may have benefited Government in the increased income under that head, but it did no good to the roadside young trees which had been seen to thrive unmolested under the Deputy Commissioner. It would be cruel waste of time of Public Works Department Officers if they were to prosecute in the Court every offender for lopping and cutting trees. There is thus needed something more than this passive help by the Civil authorities. Now to return to an examination of the progress, this division has made in arboriculture during the three years under report, and to see how far the above-mentioned difficulties have affected it in this District.

(*a*). The scattered trees in and out of Fort Akalgarh have decreased by 130 in number. This is chiefly due to old trees having died out by age and partly to a few trees having been uprooted by storms.

(*b*). The avenues on the roads from Fort Akalgarh to:—(1) the Telegraph Office, (2) the city West gate, and (3) the slaughter house have fared well, though a few trees died out by age.

(*c*). The plantation of trees on Dera Ismail Khan Pezu section of North-West-Frontier road has suffered most during 1889-90. Over two miles of avenues have been destroyed simply for want of water. The Deputy Commissioner did not, as usual, supply Luni water during 1889-90, and the destruction of the avenues has been the natural consequence. The Executive Engineer represented it to the Deputy Commissioner, who in reply

practically refused to give any water for them. It now rests with the Government to decide if the remaining trees are to be transferred back to Civil authorities, or the latter officers requested to supply water in the interests of Government?

The existing young trees have been shorn of their leaves by camels and now appear as so many sticks put in the ground. A nursery of shisham, kikar and khaggal seedlings has just been started at Dera Ismail Khan in the compound of Public Works Department Rest-house to supply Litri and Pezu roads with young trees. It is hoped this nursery will be a success.

DERA GHAZI KHAN DIVISION.

The rainfall in the Dera Ghazi Khan District during the last three years has been—

	Inches.
In 1887-88	6·7
„ 1888-89	7·5
„ 1889-90	2·56

It cannot be said to have any effect on the arboriculture of this division, as the young trees are all watered by bhisties entertained specially for the purpose, and where practicable from wells direct.

All young trees are grown in avenues; the majority consist of shisham and siris with a few kikar and farash.

The length of roads fully stocked with trees at the end of each year is—

	D. G. K. Miles.	M. Garh. Miles.
In 1887-88	(not known)	9·49
„ 1888-89	39·09	10·49
„ 1889-90	41·10	13·49

Considerable damage was done to the avenue plantations by encroachments and floods of the Indus during 1888-89, hence and also during 1889-90 the mileage of well planted avenues advances but slowly.

No new nurseries have been planted as yet, but provision has been made in the current year's etimates for them.

The area of groves in the Dera Ghazi Khan District at the end of the year is 2·07 acres.

The income form sales has been as follows:—

	D. G. K. Rs.	M. Garh. Rs.
1887-88	(not known)	471
1888-89	977	485
1889-90	1,691	1,034

MOOLTAN INDEPENDENT EXECUTIVE CHARGE.

The operations connected with arboriculture in all its branches in this charge are confined to the maintenance and extension of avenues on that portion of the Mooltan and Dera Ghazi Khan road, which is within the Mooltan District, extending from the Civil Station (District Court) to the Chenab river, of which only 6·70 miles are now under the Public Works Department (Provincial), and is therefore the only field which affords any scope for arboriculture. These operations are necessarily very limited from a four-fold cause, *viz.*:—

(1). The field is of a very limited extent.

(2). The aridity of the climate and the consequent difficulty in obtaining a sufficient supply of water: the wells being few and far between.

(3). The great extremes of temperature which have a deleterious effect upon young trees.

(4). The saline nature of the soil in which there is no fertility.

The fertility however increases in proportion to its proximity to the river. The 4th and 5th miles of the road appear to resist all efforts of nurturing young trees which wither away, almost as soon as they have been put down. Seedlings have also been tried with a similar result. Near the river, however, within three or four miles from its bank, the conditions are far more favourable, and the young trees planted in 1887-88 and 1888-89 are thriving famously.

The failures in 1887-88 amoumted to 75 per cent. of those planted, while in 1888-89 they did not exceed 46 per cent. The difference in these results was due to those in the first year under report having been planted near the river, while those in the second year were in a more barren portion of the road. The percentage is, however, high in both cases, and is accounted for by the rainfall having been nearly 50 per cent. below the average of past years.

There have been no failures in 1889-90, but the trees were only put down in February and March last, and sufficient time has not elapsed to give them a fair trial. It takes in fact two years for the plants to become fairly established, during which time they require the utmost care and attention and considerable watering.

The expenditure incurred during the last year under report is about 25 per cent. less than the previous years which is due to the increase in rainfall. The bulk of the expenditure in all cases is for watering.

The income to be derived from this road is very small owing to the very limited width of land taken up, the scantiness of the grass and the stunted nature of the trees. It rarely exceeds 5 per cent. of the expenditure, leaving a deficit of 95 per cent.

The following species of trees have been cultivated during the period under report:—

(1). Kikar *Acacia Arabica.*
(2). Farash * * * *
(3). Shisham (*Dalbergia Sissu*).
(4). Siris (*Acacia Speciosa*).
(5). Palmyra (*Borassus Flabelli-formis*).
(6). Jand * * *
(7). Pipal (*Ficus religiosa*).
(8). Bur *Ficus Indica.*

of which about 75 per cent. are No. 3.

LAHORE PROVINCIAL DIVISION.

Lahore District.

The roads in this District are—

(*a*). Grand Trunk Road from Atari to Lahore.

(*b*). From Lahore to mile 22 (Lahore and Peshawar road).

(*c*). From Lahore to Kaisar-i-Hind Bridge.

(*a*). With the exception of a few miles, where the soil is bad, is stocked with trees which are doing well.

(*b*). Is a particularly bad soil containing lot of saltpetre. Attempt is however being made to plant trees.

(*c*). Is a very well wooded road, with the exception of mile 315. In most miles there are four lines of trees all thriving well. In the District map, only the lines next to the metalled surface are treated. Shisham thrives well on this road.

Amritsar District.

The only road in this District in charge of the Executive Engineer is the Grand Trunk Road on which shisham appears to thrive well. An attempt was made about 10 years to plant mango and jaman trees in about 5 miles round about Amritsar station. A small percentage of these only are doing well.

Gurdaspur District.

The roads in charge of the Executive Engineer are from Pathankot to Ckakki, and that from Pathankot to Dalhousie. The former is well wooded with mango trees for a greater part of it. On the latter, 2 miles of mango trees were planted this year, and the plantation will be gradually extended.

STATEMENT No. I.

Rainfall Return.

District.	Year.	Average Rainfall of Past Years.			Rainfall of Year under Report.			Remarks.
		1st April to 30th September.	1st October to 31st March.	Total.	1st April to 30th September.	1st October to 31st March.	Total.	
Muzaffargarh ...	1887-88	4·56	1·37	5·93	4·0	1·5	5·5	
	1888-89				0·3	1·8	2·1	
	1889-90				4·50	0·61	5·11	
Mooltan ...	1887-88	5·53	1·52	7·05	2·1	1·5	3·6	
	1888-89				2·6	1·1	3·7	
	1889-90				6·10	0·50	6·60	
Dera Ghazi Khan ...	1887-88	5·29	1·86	7·15	4·5	2·2	6·7	
	1888-89				5·3	2·2	7·5	
	1889-90				2·10	0·46	2·56	
Dera Ismail Khan...	1887-88	5·86	2·52	8·38	6·0	1·4	7·4	
	1888-89				2·1	4·0	6·1	
	1889-90				3·80	0·52	4·32	
Montgomery ...	1887-88	8·34	2·20	10·54	8·8	1·1	9·9	
	1888-89				4·4	2·0	6·4	
	1889-90				8·60	0·50	9·10	
Jhang ...	1887-88	8·67	2·26	10·93	7·2	1·2	8·4	
	1888-89				4·1	2·6	6·7	
	1889-90				5·20	0·55	5·75	
Bannu ...	1887-88	9·00	3·79	12·79	8·0	1·9	9·9	
	1888-89				4·1	2·8	6·9	
	1889-90				6·60	2·27	8·87	
Shahpur ...	1887-88	11·28	3·58	14·86	3·9	3·1	7·0	
	1888-89				8·3	5·6	13·9	
	1889-90				7·50	1·03	8·53	
Hissar ...	1887-88	13·20	2·32	15·52	19·8	1·7	21·5	
	1888-89				10·7	3·0	13·7	
	1889-90				14·40	0·55	14·95	
Ferozepur ...	1887-88	18·49	3·82	22·31	9·1	1·5	10·6	
	1888-89				15·6	4·9	20·5	
	1889-90				16·00	0·91	16·91	
Peshawar ...	1887-88	7·42	5·82	13·24	3·0	3·8	6·8	
	1888-89				2·8	7·7	10·5	
	1889-90				4·80	1·66	6·46	
Kohat ...	1887-88	12·89	6·48	19·37	7·0	3·0	10·0	
	1888-89				3·7	7·1	10·8	
	1889-90				11·50	3·38	14·88	
Rohtak ...	1887-88	17·18	2·70	19·88	28·6	2·0	30·6	
	1888-89				17·6	3·4	21·0	
	1889-90				9·20	0·65	9·85	
Lahore ...	1887-88	17·64	4·00	21·64	18·6	1·8	20·4	
	1888-89				10·7	5·7	16·4	
	1889-90				14·90	1·08	15·98	
Karnal ...	1887-88	25·40	4·33	29·73	42·7	3·6	46·3	
	1888-89				31·2	5·0	36·2	
	1889-90				22·30	1·44	23·74	
Jhelum ...	1887-88	18·57	6·03	24·60	14·4	4·8	19·2	
	1888-89				19·2	9·1	28·3	
	1889-90				24·50	1·69	26·19	
Gujranwala ...	1887-88	20·23	5·24	25·47	19·8	4·3	24·1	
	1888-89				12·7	8·1	20·8	
	1889-90				15·50	2·86	18·36	
Gurgaon ...	1887-88	23·71	2·44	26·15	28·2	2·2	30·4	
	1888-89				24·8	3·4	28·2	
	1889-90				16·30	1·19	17·49	

STATEMENT No. I—(concluded).

District.	Year.	Average Rainfall of past years.			Rainfall of year under report.			Remarks.
		1st April to 30th September.	1st October to 31st March.	Total.	1st April to 30th September.	1st October to 31st March.	Total.	
Amritsar ...	1887-88	21·85	4·46	26·31	14·2	1·4	15·6	
	1888-89				18 8	8·8	27·6	
	1889-90				19·30	1·60	20·90	
Delhi ...	1887-88	24·17	3·01	27·18	32·3	2·5	34·8	
	1888-89				28·5	4·9	33·4	
	1889-90				23·70	0·82	24·52	
Jullundur ...	1887-88	23·26	4·99	28·25	25·1	1·8	26·9	
	1888-89				18·1	6·1	24·2	
	1889-90				16·70	1·68	18·38	
Ludhiana ...	1887-88	25·16	6·23	31·39	27·0	2 2	29·2	
	1888-89				20·5	5·7	26·2	
	1889-90				19·30	2·26	21·56	
Rawalpindi ...	1887-88	23·40	8·56	31·96	27·0	7·2	34·2	
	1888-89				23·5	14·2	37·7	
	1889-90				25·10	4·07	29·17	
Gujrat ...	1887-88	22·72	7·20	29·92	18·3	3·3	21·6	
	1888-89				12·0	7·0	19·0	
	1889-90				18·80	1·51	20·31	
Gurdaspur ...	1887-88	25·26	6·55	31·81	32·4	4·9	37·3	
	1888-89				29 9	18·0	47·9	
	1889-90				23·80	2·07	25·87	
Umballa ...	1887-88	30·00	5·42	35·42	36 8	3 1	39·9	
	1888-89				42·2	11·0	53·2	
	1889-90				19·50	1·40	20·90	
Sialkot ...	1887-88	29·93	6·71	36·64	21·3	5·6	26·9	
	1888-89				23 6	12 0	35 6	
	1889-90				23·80	2·26	26 06	
Hoshiarpur ...	1887-88	28·82	6·22	35·04	38·4	3·7	42·1	
	1888-89				39·6	7·7	47·3	
	1889-90				27·70	2·57	30 27	
Simla ...	1887-88	59·56	11·09	70·65	43·2	5·5	48·7	
	1888 89				50 0	18·5	68·5	
	1889-90				54 00	3 78	57·78	
Hazara ...	1887-88	30·08	15·31	45·39	29·6	9·8	39·4	
	1888-89				20 5	19·6	40·1	
	1889-90				31·00	6·82	37 82	
Kangra ...	1887-88	107·41	17·14	124·55	78·8	12 5	91·3	
	1888-89				88·1	24·3	112 4	
	1889-90				114·40	8 46	122·86	

STATEMENT NO. II (*a*).

Progress Statement of Nurseries in the Districts for the years 1887-88 *to* 1889-90.

1	2	3	4	5	6	7
DISTRICT.	Year.	Area under nurseries at beginning of the year.	Area added during the year.	Area given up or transferred to groves during the year.	Area remaining at end of the year.	REMARKS.
		Acres and decimals.	*Acres and decimals.*	*Acres and decimals.*	*Acres and decimals.*	
ARID.						
Muzaffargarh ...	1887-88	31·78	...	·07	31·71	Column 5 includes—
	1888-89	31·71	...	...	31·71	28·87 acres transferred to groves.
	1889-90	31·71	..	30·28	1·43	1·41 „ all trees removed
						30·28
Mooltan ...	1887-88	·56	55·63	·74	55·45	
	1888-89	55·45	·96	·55	55·86	The entry of 15·38 acres in column 5 is due to previous errors.
	1889-90	55·86	·24	15·38	40·72	
Dera Ghazi Khan...	1887-88	6·00	...	...	6 00	
	1888-89	6·00	...	...	6 00	
	1889-90	6·00	...	1·25	4 75	
Dera Ismail Khan...	1887-88	6·06	1·75	...	7 81	
	1888-89	7·81	...	...	7·81	
	1889-90	7 81	...	...	7·81	
Montgomery ...	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89					
	1889-90					
Jhang ...	1887-88	·29	·41	·36	·34	
	1888-89	·34	·63	·08	·89	
	1889-90	·89	·11	·73	·27	
Bannu ...	1887-88	·22	...	...	·22	
	1888 89	·22	·25	...	·47	
	1889-90	·47	...	...	·47	
Shahpur ...	1887-88	25·29	2·39	1·58	26·10	
	1888-89	26·10	2·32	2 01	26·41	
	1889-90	26·41	7·26	3·69	29 98	
Hissar ...	1887-88	57·70	...	...	57·70	
	1888-89	57·70	...	...	57·70	
	1889-90	57·70	(*a*)·26	(*b*)30·76	27·20	(*a*) Omitted previously an now adjusted.
VERY DRY.						(*b*) Transferred to groves.
Ferozepur ...	1887-88	7·00	2·75	...	9·75	In Ferozepur District the trees on road-side are not generally transplanted from nurseries. They are watered when established by means of narrow ditches along side of the road from the Inundation Canals. The largenurseries of Arabian dates have been almost exhausted by distribution to zemindars and others; hence not much has been done as regards the nurseries in this district.
	1888-89	9·75	1·00	...	10·75	
	1889-90	10·75	1·75	7 25	5·25	
Peshawar ...	1887-88	6·18	3·89	...	10·07	
	1888-89	10·07	1·00	...	11·07	
	1889-90	11·07	·47	·07	11·47	
Kohat ...	1887-88	...	...	...	...	
	1888-89	...	·50	·25	·25	
	1889-90	·25	·50	·19	·56	
Rohtak ...	1887-88	1·92	·98	1·69	1·21	
	1888-89	1·21	1·33	1·15	1 39	
	1889-90	1·39	·47	·45	1·41	
Lahore ...	1887-88	2·99	2·31	·38	4·92	
	1888-89	4·92	·31	·62	4·61	
	1889-90	4·61	...	·52	4·09	
„ Municipality...	1889-90	...	0·20	...	0·20	·20 acres omitted in previous returns, and now shewn in column 4.
Karnal ...	1887-88	8·53	...	...	8 53	
	1888-89	8·53	...	...	8·53	
	1889-90	8 53	...	...	8·53	
DRY.						
Jhelum ...	1887-88	6·90	1·16	·19	7·87	
	1888-89	7·87	·44	·38	7·93	
	1889-90	7·93	2·83	4·98	5 78	4·98 acres transferred to groves.
Gujranwala ...	1887-88	·57	·29	·36	·50	
	1888-89	·50	·47	·94	·03	Area given up to the zemindars.
	1889-90	·03	...	·03	..	

STATEMENT No. II (*a*).—concluded.

1	2	3	4	5	6	7
DISTRICT.	Year.	Area under nurseries at beginning of the year.	Area added during the year.	Area given up or transferred to groves during the year.	Area remaining at end of the year.	REMARKS.
		Acres and decimals.	*Acres and decimals.*	*Acres and decimals.*	*Acres and decimals.*	
Gurgaon ...	1887-88	3·40	1·27	2·44	2·23	
	1888-89	2 23	·89	·43	2·69	
	1889-90	2·69	·29	·89	2·09	
Amritsar ...	1887-88	32·69	2·44	5·25	29·88	
	1888-89	29 88	16·77	0·06	46·59	
	1889-90	37·57	0 61	0·31	37·37	
„ Municipality	1889-90	9·02	...	1·25	7·77	
Delhi ...	1887-88	1,208·86	...	...	1,208 86	1208·93 acres deducted on account of previous errors and transfer of Tilauri rakh to plantation and of certain nurseries to groves.
	1888 89	1,208 86	·75	·25	1,209·36	
	1889-90	1,209·36	1·81	1,208·93	2·24	
Jullundur ...	1887-88	16·69	1·16	3·69	14·16	
	1888-89	14·16	1·38	1·12	14 42	
	1889-90	14·42	(*a*)4·63	(*b*)3·95	15·10	(*a*) Previously stocked but omitted hitherto.
Ludhiana ...	1887-88	5·38	2·94	2 84	5·48	(*b*) Transferred to groves.
	1888-89	5·48	·50	·63	5·35	
	1889-90	5·35	·09	1·13	4·31	
Rawalpindi ...	1887-88	4·69	3.28	...	7·97	
	1888-89	7·97	2·36	·17	10·16	
	1889-90	10·16	3·65	3·54	10 27	
„ Municipality	1889-90	...	·54	...	·54	·54 acres stocked previously but omitted hithe rto.
FOREST.						
Gujrat ...	1887-88	4·25	0·25	·0·25	4·25	
	1888-89	4·25	...	1·00	3·25	
	1889-90	3·25	0·62	1·75	2·12	
Gurdaspur ...	1887-88	5·84	·94	1·29	5·49	
	1888-89	5·49	·97	1·12	5·34	
	1889-90	5·34	·92	·41	5·85	
Umballa ...	1887-88	...	3·81	·75	3·06	
	1888-89	3·06	3·09	2·00	4·15	
	1889-90	4·15	...	4·15	...	Transferred to groves.
Sialkot ...	1887-88	32·08	1·30	·64	32·74	
	1888-89	32·74	2·10	1·34	33·50	
	1889-90	33·50	2·04	(*a*)17·33	18·21	(*a*) Due to error in previous returns.
Hoshiarpur ...	1887-88	2·77	...	...	2·77	
	1888-89	2·77	...	...	2·77	
	1889-90	2·77	...	...	2·77	
Simla ...	1887-88	2·00	1·50	0 50	3·00	
	1888-89	3·00	...	...	3·00	
	1889-90	3·00	1·00	...	4·00	Column 4 includes ·5 acre omitted in previous returns.
Hazara ...	1887-88	13·62	3·06	2·87	13·81	
	1888-89	13·81	2·38	·69	15 50	
	1889-90	15·50	1·50	2·00	15 00	
Kangra ...	1887-88	42·08	1·03	0·13	42·98	
	1888-89	42·98	18·01	4·56	56·43	
	1889-90	56·43	1·81	(*a*)51·88	6·36	(*a*) This entry includes — 11·75 acres transferred to groves. 39·16 acres transferred to plantations. Dharmsala Municipality
„ Municipality	1889-90	...	5·81	2·14	3·67	Column 4 includes 3·81 acres stocked previously and omitted in former returns; 2 acres planted during the year 1889-90
Total ...	1887-88	1,536 34	94·54	26·02	1,604·86	
	1888-89	1,604·86	58·41	19·35	1,643 92	
	1889-90	1,643·92	39·41	1,395·24	288·09	

STATEMENT No. II (*b*).

Progress Statement of Nurseries in the Canal Divisions for the years 1887-88 *to* 1889-90.

1	2	3	4	5	6	7
Canal Division.	Year.	Area under nurseries at beginning of the year.	Area added during the year.	Area given up or transferred to groves during the year.	Area remaining at end of the year.	Remarks.
		Acres and decimals.	*Acres and decimals.*	*Acres and decimals.*	*Acres and decimals.*	
Bari Doab Canal, 1st Division.	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Bari Doab Canal, 2nd Division.	1887-88	0·40	1·00	...	1·40	
	1888-89	1·40	0 97	...	2·37	
	1889-90	2·37	...	2 00	0·37	
Bari Doab Canal, 3rd Division.	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Upper Sutlej Division, Inundation Canals.	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Lower Sutlej and Chenab Division, Inundation Canals.	1887-88	...	3·00	1·00	2·00	
	1888-89	2·00	...	...	2·00	
	1889-90	2 00	0·25	1·25	1·00	
Dera Ghazi Khan Division, Indus Canals.	1887-88	0·04	0·76	0·04	0·76	
	1888-89	0·76	0·10	0·38	0 48	
	1889-90	0·48	0·46	0·45	0·49	
Muzaffargarh Canal Division:	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Western Jumna Canal, Karnal Division.	1887-88	21·85	25·70	16.34	31·21	* Includes 9·19 acres due to error in previous returns.
	1888-89	31 21	6·87	13·42	24·66	
	1889-90	24·66	2 02	14·58*	12·10	
Western Jumna Canal, Delhi Division.	1887-88	19·58	0·01	3·16	16·43	
	1888-89	16·43	0 50	0·22	16·71	
	1889-90	16·71	0 07	16·71	0·07	
Sirhind Canal, Ferozepur Division.	1887-88	16 30	2·00	16 30	2·00	
	1888-89	2 00	5 00	2·00	5 00	
	1889-90	5·00	0·25	4 00	1·25	
Sirhind Canal, Ludhiana Division.	1887-88	10·04	2·25	0·25	12·04	
	1888-89	12 04	8·89	9·13	11·80	
	1889-90	11·80	1·52	3·11	10·22	
Sirhind Canal, Patiala Division.	1887-88	3·09	7·42	2·00	8·51	
	1888-89	8·51	12·44	1·47	19·48	
	1889-90	19 48	13 67	11·69	21·46	
Chenab Weir Division.	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Chenab Canal Division.	1887-88	0 25	3·25	0 25	3·25	
	1888-89	3·25	...	...	3 25	
	1889-90	3·25	...	2·00	1·25	
Swat River Canal Division.	1887 88	2·00	...	...	2·00	All the nurseries have grown up into groves.
	1888-89	2·00	2·88	0·62	4·26	
	1889-90	4·26	...	4·26	...	
Total ...	1887-88	73·55	45·39	39·34	79·60	
	1888-89	79·60	37·65	27·24	90·01	
	1889-90	90·01	18·25	60·05	48 21	

STATEMENT No. II. (c).

Progress Statement of Nurseries in the Provincial Divisions for the years 1887-88 *to* 1889-90.

1	2	3	4	5	6	7
Provincial Division.	Year.	Area under nurseries at beginning of the year.	Area added during the year.	Area given up or transferred to groves during the year.	Area remaining at end of the year.	Remarks.
		Acres and decimals.	*Acres and decimals.*	*Acres and decimals.*	*Acres and decimals.*	
Peshawar Division	1887-88	...	·17	·14	·03	Chief trees planted are Eucalyptus, chanar, walnut, bakain, shisham, siris, phulai and farash.
	1888-89	·03	·37	·13	·27	
	1889-90	·27	2·19	·56	1·90	
Rawalpindi Division	1887-88	...	0·13	...	0·13	
	1888-89	0·13	0·41	...	0·54	
	1889-90	0·54	0·88	...	1·42	
Kohat N.-W. F. Road Division.	1887-88	...	1·50	...	1·50	
	1888-89	1·50	·81	...	2·31	
	1889-90	2·31	4·26	...	6·57	
Gujranwala Independent Sub-division.	1887-88	...	...	...	...	
	1888-89	...	...	...	...	
	1889-90	...	·14	...	·14	
Jullundur Division	1887-88	2·39	·68	1·43	1·64	
	1888-89	1·64	·14	·52	1·26	
	1889-90	1·26	2·52	·58	3·20	
Simla Division ...	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89					
	1889-90					
Amballa Division ...	1887-88	4·11	2·24	2·73	3·62	During 1888-89, Delhi Division with ·08 acres, was separated, hence the difference.
	1888-89	3·54	·08	2·18	1·44	
	1889-90	1·44	·30	...	1·74	
Delhi Division ...	1887-88	...	...	...	...	Included in Amballa Provincial Division.
	1888-89	0·08	...	...	0·08	
	1889-90	0·08	...	0·08	...	
D. I. Khan Division	1887-88	...	...	...	...	This nursery has been started in March 1890 and has seedlings of shisham, kikar and khaggal.
	1888-89	...	...	...	...	
	1889-90	...	2·09	...	2·09	
D. G. Khan Divn.	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89					
	1889-90					
Lahore Division ...	1887-88	·64	·38	·41	·61	
	1888-89	·61	·70	·18	1·13	
	1889-90	1·13	·69	·51	1·31	
Mooltan Division ...	1887-88	...	...	...	...	
	1888-89	...	0·04	0·01	0·03	
	1889-90	0·03	...	0·03	...	
Total ...	1887-88	7·14	5·10	4·71	7·53	
	1888-89	7·53	2·56	3·03	7·06	
	1889-90	7·06	13·07	1·76	18·37	

STATEMENT No. III (*a*).

Progress Statement of Plantations in the Districts for the years 1887-88 *to* 1889-90.

1	2	3	4	5	6	7	8
DISTRICT.	Year.	Area taken up for plantation at the beginning of the year.	Area successfully stocked at beginning of year.	Area sown or planted during the year.	Area of failures during the year.	Area stocked at end of the year.	REMARKS.
		Acres and decimals.	*Acres and decimals.*	*Acres and decimals.*	*Acres and decimlas.*	*Acres and decimals.*	
ARID.							
Muzaffargarh ...	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Multan ...	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Dera Ghazi Khan	1887-88 1888-89 1889-90	... ... 135·00	... ...	... ... 135·00	... ...	... ... 135·00	Transferred from groves.
Dera Ismail Khan	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Montgomery ...	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Jhang ...	1887-88 1888-89 1889-90	261·06 261·06 261·03	261·06 261·06 261·03	... ...	... ·03 ...	261·06 261·03 261·03	Transferred from groves.
Bannu ...	1887-88 1888-89 1889-90	1,150·00 1,150·00 1 150·00	1,084·00 1,150 00 1,150·00	66·00	... ...	1,150·00 1,150·00 1,150 00	Transferred from groves.
Shahpur	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Hissar ...	1887-88 1888 89 1889-90	... ... 21·37	... ...	... ... 21·37	... ...	... ... 21·37	
VERY DRY.							
Ferozepur ...	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Peshawar ...	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Kohat ...	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Rohtak ...	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Lahore ...	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Karnal ...	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
DRY.							
Jhelum ...	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Gujranwala ...	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	

STATEMENT No. III (a)—concluded.

Progress Statement of Plantations in the Districts for the years 1887-88 *to* 1889-90.

1	2	3	4	5	6	7	8
DISTRICT.	Year.	Area taken up for plantation at the beginning of the year.	Area successfully stocked at beginning of year.	Area sown or planted during the year.	Area of failures during the year.	Area stocked at end of the year.	REMARKS.
		Acres and decimals.	*Acres and decimals.*	*Acres and decimals.*	*Acres and decimals*	*Acres and decimals.*	
Gurgaon ...	1887-88	2,15·34	...	164·84	132·03	32·81	These figures have been transferred from Grove statement.
	1888-89	2,156·34	32·8	201·65	138·65	95·81	
	1889-90	2,156·34	95·81	666·5	149·65	12·81	
Amritsar ...	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Out of 623 acres, 606 are on account of Tilauri rakh and 17 on account of Mehrauli plantation. The latter was omitted from previous years' statements. Out of 606 acres, 446 were stocked previously, and 160 acres planted during 1889-90.
	1888-89						
	1889-90						
Delhi ...	1887-88	...	...	...	...	...	
	1888-89	...	...	...	...	...	
	1889-90	915·00	...	623·00*	45·00	578·00	
Jullundur ...	1887-88	224·53	173·67	35·00	3·22	205·45	Figures transferred from Grove statement.
	1888-89	224·53	205·45	...	36·00	169·45	
	1889-90	201·46	169·45	32·00	41·77†	159·68	† Includes 10·77 acres washed away by the river.
Ludhiana ...	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89						
	1889-90						
Rawalpindi ...	1887-88	*Nil.*	*Nil.*	*Nil.*	*Ni*	*Nil.*	
	1888-89						
	1889-90						
FOREST.							
Gujrat ...	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89						
	1889-90						
Gurdaspur ...	1887-88	26·74	25 18	...	...	25·18	Transferred from groves.
	1888-89	26·74	25·18	...	...	25·18	
	1889-90	26·74	25·18	...	...	25·18	
Amballa ...	1887 88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89						
	1889-90						
Sialkot ...	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89						
	1889-90						
Hoshiarpur ...	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89						
	1889-90						
Simla ...	1887-88	52·00	...	52·00	·50	51·50	Transferred from groves.
	1888-89	51·50	51·50	·36	...	51·86	
	1889-90	51·50	51·86	...	·36	51 50	
Hazara ...	1887-88	...	...	...	...	...	Column 5 includes 27·25 acres erroneously omitted in previous returns, 1·50 acres planted during the year.
	1888-89	...	...	...	...	...	
	1889-90	41·63	...	28·75	·50	28 25	
Kangra (Municipality.	1887-88	...	...	...	...	...	Column 5 is made up as follows:— 39·16 acres transferred from nurseries under District Board to Dharmsala Municipality. 9·60 acres erroneously omitted in previous returns. 13 59 acres planted during the year.
	1888-89	...	...	...	...	...	
	1889-90	62·35	...	62·35	4·22	58·13	
Total ...	1887-88	3,870·67	1,543 91	317·84	135·75	1,726·00	
	1888 89	3,870·17	1,726·00	202·01	174·68	1,753·33	
	1889-90	5,022·42	1,753·33	906·77	237·28	2,422·82	

STATEMENT No. III (*b*).

Progress Statement of Plantations in the Canal Divisions for the years 1887-88 *to* 1889-90.

1	2	3	4	5	6	7	8
Canal Division.	Year.	Area taken up for plantation at the beginning of the year.	Area successfully stocked at beginning of year.	Area sown or planted during the year.	Area of failures during the year.	Area stocked at end of the year.	Remarks.
		Acres and decimals.	*Acres and decimals.*	*Acres and decimals.*	*Acres and decimals.*	*Acres and decimals.*	
Bari Doab Canal, 1st Division.	1887-88	425·84	213·00	197·00	19·00	391·00	The figures for 1887-88 and 1888-89 have been transferred from groves.
	1888-89	568·84	391·00	143·00	...	534·00	
	1889-90	3,564·00	534·00	1,370·00*	94·00	1,810·00	* Includes 1,246 acres stocked previously but not shewn, and 124 acres as planted during 1889-90.
Bari Doab Canal, 2nd Division.	1887-88	...	...	...	...	...	
	1888-89	...	...	...	...	...	
	1889-90	2,373	...	2,373·00	...	2,373·00	4·58 acres transferred from groves. 2368·42 acres omitted in previous return.
Bari Doab Canal, 3rd Division.	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89						
	1889-90						
Upper Sutlej Division, Inundation Canals.	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89						
	1889-90						
Lower Sutlej and Chenab Division, Inundation Canals.	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89						
	1889-90						
Dera Ghazi Khan Division, Indus Canal.	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89						
	1889-90						
Muzaffargarh Canal Division.	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89						
	1889-90						
Western Jumna Canal, Karnal Division.	1887-88	...	...	...	...	...	
	1888-89	...	...	...	...	...	
	1889-90	6·65	...	6·65	...	6·65	Shisham, kikar and tun.
Western Jumna Canal, Delhi Division.	1887-88	...	...	...	...	...	
	1888-89	...	...	...	...	...	
	1889-90	669·96	...	*669·96	...	669·96	* Not shewn previously.
Sirhind Canal, Ferozepur Division.	1887-88	...	...	...	...	...	
	1888-89	...	...	...	...	...	
	1889-90	994·62	...	994·62*	52·95	941·67	* 863 acres transferred from groves. 131·62 planted during the year, and 52·95 acres failures.
Sirhind Canal, Ludhiana Division.	1887-88	5,999·00	4,091·47	2,012·00	1,941·00	4,162·47	Transferred from groves.
	1888-89	5,999·00	4,162·47	145·25	95·25	4,212·47	
	1889-90	5,999·00	4,212·47	598·50	560·45	4,250·52	
Sirhind Canal, Patiala Division.	1887-88	...	...	...	...	...	
	1888-89	...	...	...	...	...	
	1889-90	1,411	...	784·00	76·00	708·00	Column 5 includes 554 acres transferred from groves, 35 acres omitted in previous returns and 195 acres as planted during 1889-90.
Chenab Weir Division	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89						
	1889-90						
Chenab Canal Division.	1887-88	330·00	...	330·00	257·00	73·00	Transferred from groves
	1888-89	330·00	73·00	157·00	131·00	99·00	
	1889-90	457·00	99·00	84·01	...	183·01	84·01 acres survived from former failures.
Swat River Canal Division.	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89						
	1889-90						
Total ...	1887-88	6,754·84	4,304·47	2,539·00	2,217·00	4,626·47	
	1888-89	6,897·84	4,626·47	445·25	226·25	4,845·47	
	1889-90	15,475·23	4,845·47	6,880·74	783·40	10,942·81	

STATEMENT No. III (c).

Progress Statement of Plantations in the Provincial Divisions for the years 1887-88 *to* 1889-90.

1	2	3	4	5	6	7	8
Provincial Division.	Year.	Area taken up for plantation at the beginning of the year.	Area successfully stocked at beginning of year.	Area sown or planted during the year.	Area of failures during the year	Area stocked at end of the year.	Remarks.
		Acres and decimals.	*Acres and decimals.*	*Acres and decimals.*	*Acres and decimals.*	*Acres and decimals.*	
Peshawar Division	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Rawalpindi Division.	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Kohat, N.-W. F. Road Division.	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Gujranwala Independent Sub Division.	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Jullundur Division.	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Simla Division ...	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Amballa Division	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Delhi Division ...	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Dera Ismail Khan Division.	1887-88 1888-89 1889-90	... ... 207·96	... ...	... ... 155·97*	... ...	... ... 155·97	* Omitted in returns of previous years. The plantation dates from 1876.
Dera Ghazi Khan Division.	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Lahore Division	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Mooltan Division	1887-88 1888-89 1889-90	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Total ...	1887-88 1888-89 1889-90	... ... 207·96	... ...	... ... 155·97	... ...	... ... 155·97	

NO. IV (a).

Progress Statement of Groves in the Districts for the years 1887-88 *to* 1889-90.

1	2	3	4	5	6	7
District.	Year.	Area of groves at the beginning of the year.	Area planted or transferred from nurseries during the year.	Area of failures during the year.	Area stocked with trees or plants alive at end of the year.	Remarks.
		Acres and decimals.	*Acres and decimals.*	*Acres and decimals.*	*Acres and decimals.*	
ARID.						
Muzaffargarh ...	1887-88	197·60	3·00	1·54	199·06	
	1888-89	199·06	...	...	199 06	
	1889-90	199·06	30·25	...	229 31	28 87 acres transferred from nurseries.
Mooltan ...	1887-88	49·52	...	1·80	47 72	
	1888-89	47·72	...	...	47 72	
	1889-90	47·72	...	01	47 71	
Dera Ghazi Khan...	1887-88	226·50	...	...	226 50	
	1888-89	226·50	...	...	226 50	
	1889-90	226 50	...	216·50	10·00	The entry in column 5 is due to the separation of 135 acres from "groves" to "plantations" and to the transfer of certain groves to the Public Works Department with their roads and other areas to zemindars.
Dera Ismail Khan...	1887-88	8	10	2	16	
	1888-89	16	...	...	16	
	1889-90	16	...	...	16	
Montgomery ...	1887-88	31·0	...	...	31·0	
	1888-89	31·0	...	...	31·0	
	1889-90	31 0	715	...	746 0	715 acres were previously stocked but omitted hitherto.
Jhang ...	1887-88	25·83	1·92	1·12	26·63	Area shewn in Statement III (*a*) has been transferred from this statement.
	1888-89	26 63	·19	·25	26·57	
	1889-90	26·57	...	·01	26 56	
,, Municipality...	1889-90	...	4·09*	...	4·09	* This figure includes 3·06 miles stocked previously but not shewn hitherto.
Bannu ...	1887-88	...	...	...	...	
	1888-89	...	...	...	...	
	1889-90	...	1·75	...	1 75	Omitted in previous returns and now shewn.
Shahpur ...	1887-88	270·89	100·25	17·78	353 36	
	1888-89	353·36	172·87	10·16	516·07	
	1889-90	516·07	44·17	9·51	550·73	
Hissar ...	1887-88	27·31	0·50	...	27 81	
	1888-89	27·81	6 47	...	34 28	
	1889 90	34·28	(*a*) 82·22	...	116·50	(*a*) 30·76 acres transferred from nurseries and 51·46 acres planted during 1889-90.
,, Municipality...	1887-88	26·04	...	...	26·04	
	1888-89	26·04	...	...	26·04	
	1889-90	26·04	...	...	26·04	
VERY DRY.						
Ferozepur ...	1887-88	437·64	32·00	134·41	335 23	
	1888-89	335·23	119·31	...	454·54	
	1889-90	454·54	4·00	...	458·54	
Peshawar ...	1887-88	12	...	...	12	
	1888-89	12	...	...	12	
	1889-90	12	4·68	...	16·68	
,, Municipality...	1887-88	*Nil.*	*Nil.*	*Nil*	*Nil.*	
	1888-89					
	1889-90					
Kohat ...	1887-88	1·50	1 00	...	2·50	
	1888-89	2·50	·10	...	2·60	
	1889-90	2·60	(*b*) 8 85	...	11·45	(*b*) Column 4 includes 5·87 acres previously stocked but not shewn hitherto.
Rohtak	1887-88	527·69	60·27	45·01	542·95	
	1888-89	542·95	81·02	86·01	537 96	
	1889-90	537·96	25·00	20·02	542·94	
Lahore ...	1887-88	7·45	3·84	...	11·29	
	1888-89	11·29	1·25	...	12 54	
	1889-90	12·54	2·13	...	14·67	
Karnal ...	1887-88	311 31	...	...	311·31	
	1888-89	311·31	·73	...	312·04	
	1889-90	312·04	...	...	312·04	

STATEMENT No. IV (*a*).—concluded.

1	2	3	4	5	6	7
DISTRICT.	Year.	Area of groves at the beginning of the year.	Area planted or transferred from nurseries during the year.	Area of failures during the year.	Area stocked with trees or plants alive at end of the year.	REMARKS.
		Acres and decimals.	*Acres and decimals.*	*Acres and decimals.*	*Acres and decimals.*	
DRY.						
Jhelum ...	1887-88	·64	...	...	·64	
	1888-89	·64	...	...	·64	
	1889-90	·64	(*a*) 4·98	...	5·62	(*a*) 4·98 acres transferred from nurseries.
Gujranwala ...	1887-88	...	4·00	...	4·00	
	1888-89	4·00	...	4·00	...	
	1889-90	...	...	...	...	
Gurgaon ...	1887-88	25·12	...	...	25·12	
	1888-89	25·12	·03	...	25·15	
	1889-90	25·15	259·93	...	285·08	
Amritsar ...	1887-88	3·25	...	...	3·25	
	1888-89	3·25	0·25	0·50	3·00	
	1889-90	3·00	2·37	2·25	3·12	
Delhi ...	1887-88	30·54	11·37	31·34	10·57	
	1888-89	10·57	12·50	...	23·07	
	1889-90	23·07	·11	12·51	10·67	·11 acres transferred from nurseries.
Jullundur ...	1887-88	...	...	...	...	Groves in 1887-88 and 1888-89 transferred to plantations and 4·79 acres include 3·95 acres transferred from nurseries.
	1888-89	...	...	...	...	
	1889-90	...	4·79	...	4·79	
Ludhiana ...	1887-88	149·0	3·00	5·0	147·00	
	1888-89	147·0	0·64	...	147·64	
	1889-90	147·64	206·25	1·30	352·59	
Rawalpindi ...	1887-88	357·73	...	·04	357·69	
	1888-89	357·69	·14	·19	357·64	
	1889-90	357·64	·42	·01	358·05	
,, Municipality.	1889-90	...	20·33	·04	20·29	20·33 acres stocked previously but not shewn hitherto.
FOREST.						
Gujrat ...	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89					
	1889-90					
Gurdaspur ...	1887-88	4·89	...	...	4·89	25·18 acres groves during 1887-88 and 1888-89 transferred to plantations.
	1888-89	4·89	...	...	4·89	
	1889-90	4·89	...	·01	4·88	
Umballa ...	1887-88	...	...	...	...	
	1888-89	...	...	...	...	
	1889-90	...	6·27*	·77	5·50	* 4·15 transferred from nurseries.
Sialkot ...	1887-88	22·00	·09	·09	22·00	
	1888-89	22·00	·18	·03	22·15	
	1889-90	22·15	4·09	19·19†	7·05	†Since the abolition of the Golushah fair, the maintenance of the groves at the site of the fair has been abandoned.
Hoshiarpur ...	1887-88	3·23	...	...	3·23	
	1888-89	3·23	...	...	3·23	
	1889-90	3·23	12·00	...	15·23	
Simla ...	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89					
	1889-90					
Hazara ...	1887-88	32·75	·72	·97	32·50	
	1888-89	32·50	1·75	1·25	33·00	
	1889-90	33·00	1·50	·75	33·75	
Kangra ...	1887-88	...	...	...	...	
	1888-89	...	...	...	...	
	1889-90	...	(*a*) 19·05	...	19·05	(*a*) This area includes 11·75 acres transferred from nurseries.
Total ...	1887-88	2,789·43	231·96	241·10	2,780·29	
	1888-89	2,780·29	397·43	102·39	3,075·33	
	1889-90	3,075·33	1,445·18	282·88	4,237·63	

STATEMENT No. IV (*b*).

Progress Statement of Groves in the Canal Divisions for the years 1887-88 *to* 1889-90.

1	2	3	4	5	6	7
Canal Divisions.	Year.	Area of groves at the beginning of the year.	Area planted or transferred from nurseries during the year.	Area of failures during the year.	Area stocked with trees or plants alive at end of the year.	Remarks.
		Acres and decimals.	*Acres and decimals.*	*Acres and decimals.*	*Acres and decima s.*	
Bari Doab Canal, 1st Division.	1887-88	21·59	...	...	21·59	
	1888-89	21·59	...	...	21·59	
	1889-90	21·59	...	...	21 59	
Bari Doab Canal, 2nd Division.	1887-88	134·41	16·19	...	150·60	
	1888-89	150·60	...	...	150·60	
	1889-90	150·60	(*a*) 16·68	(*b*) 4·58	162·70	(*a*) Stocked previously but not shewn hitherto. (*b*) Transferred to plan. tations.
Bari Doab Canal, 3rd Division.	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89					
	1889-90					
Upper Sutlej Division, Inundation Canals.	1887-88	39·80	...	...	39·80	
	1888-89	39·80	·50	...	40·30	
	1889-90	40·30	2·81	...	43·11	
Lower Sutlej and Chenab Division, Inundation Canals.	1887-88	...	...	...	...	
	1888-89	...	...	...	...	
	1889-90	...	135·00	...	135·00	Column 4 includes 129 acres stocked previously but not shewn, and 6 acres as planted during 1889-90.
Dera Ghazi Khan Division, Indus Canals.	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89					
	1889-90					
Muzáffargarh Canal Division.	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89					
	1889-90					
Western Jumna Canal, Karnal Division.	1887-88	1,028·45	5·88	·02	1,034·31	
	1888-89	1,034·31	3·25	...	1,037·56	
	1889-90	1,037·56	10 84	3·51	1,044·89	
Western Jumna Canal, Delhi Division.	1887-88	100·42	...	...	100·42	
	1888-89	100·42	1·50	...	101·92	
	1889-90	101·92	29·89	...	131·81	
Sirhind Canal, Ferozepur Division.	1887-88	698·00	607·00	255·00	1,050·00	863 acres shewn in column 5 represent the area transferred to plantations.
	1888-89	1,050·00	88·00	144·00	994·00	
	1889-90	994·00	3·70	863·00	134·70	
Sirhind Canal, Ludhiana Division.	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89					
	1889-90					
Sirhind Canal, Patiala Division.	1887-88	1,292·00	831·58	533·58	1,590·00	The entry of 623 acres in column 5 includes 554 acres transferres to plantations.
	1888-89	1,590·00	62·00	16·00	1,636·00	
	1889-90	1,636·00	174·00	623·00	1,187·00	
Chenab Weir Division.	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89					
	1889-90					
Chenab Canal Division.	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1889 90	...	5·00	...	5 00	
Swat River Canal Division.	1887-88	69·00	...	31·00	38·00	
	1888-89	38 00	9·00	...	47·00	
	1889-90	47·00	51·00	...	98·00	4 26 acres transferred from nurseries. 37·74 acres due to error in last year's return. 9·00 acres newly planted. 51·00 acres.
Total ...	1887-88	3,383·67	1,460·65	819·60	4,024·72	
	1888-89	4,024·27	164·25	160·00	4,028·97	
	1889-90	4,028 97	428·92	1,494·09	2,963 80	

STATEMENT No. IV (c).

Progress Statement of Groves in the Provincial Divisions for the years 1887-88 *to* 1889-90.

1	2	3	4	5	6	7
Provincial Division.	Year.	Area of groves at the beginning of the year.	Area planted or transferred from nurseries during the year.	Area of failures during the year.	Area stocked with trees or plants alive at end of the year.	Remarks.
		Acres and decimals.	*Acres and decimals.*	*Acres and decimals.*	*Acres and decimals.*	
eshawar Division	1887-88	2·41	·02	1·59	·84	
	1888-89	·84	·92	·02	1·74	
	1889-90	1·74	...	...	1·74	
Rawalpindi Division	1887-88	1,018·00	1·26	641·87†	377·39	
	1888-89	377·39	7·50	...	384·89	
	1889-90	384·89	1,090·13*	1,037·02†	438·00	* 1,086 acres transferred from Gujranwala Independent Division during 1889-90. † The entries in column 5 are due to errors in former reports.
Kohat, N.-W. F. Road Division.	1887-88	...	...	...	...	
	1888-89	...	...	...	...	
	1889-90	...	2·45	·01	2·44	
Gujranwala Independent Sub-division	1887 78	1,086·00	...	...	1,086·00	Column 4 includes 189·83 acres omitted hitherto in previous returns, and column 5, 1,086 acres transferred to Rawalpindi Provincial Division.
	1888-89	1,086 00	...	...	1,086 00	
	1889-90	1,086·00	189·83	1,086·00	189·83	
Jullundur Division	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89					
	1889-90					
Simla Division ...	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89					
	1889-90					
Amballa Division ...	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89					
	1889-90					
Delhi Division ...	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89					
	1889 90					
D. I. Khan Division	1887-88	...	...	...	...	Chiefly shisham trees. A few young shisham trees died out but have been replaced with khaggal and kikar as better suited to the locality.
	1888-89	...	2·00	...	2·00	
	1889-90	2·00	...	...	2·00	
D. G. Khan Division	1887-88	...	...	...	...	
	1888-89	...	...	...	...	
	1889-90	...	2·07	...	2·07	
Lahore Division ...	1887-88	26·00	...	3·00	23·00	3 acres due to error and now shewn in column 5.
	1888-89	23·00	...	...	23 00	
	1889-90	23·00	...	...	23·00	
Mooltan Division ...	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89					
	1889-90					
Total ...	1887-88	2,132·41	1·28	646·46	1,487·23	
	1888-89	1.487·23	10·42	·02	1,497 63	
	1889-90	1,497·63	284·48·1	2,123·03	659·08	

STATEMENT No. V (*a*).

Progress Statement of Avenues in the Districts of the Punjab for the years 1887-88 *to* 1889-90.

1	2	3	4	5	6	7	8
DISTRICT.	Year.	Length of roads and canals suitable for avenues.	Length of roads and canals fully stocked with trees at beginning of year	Length of roads and canals planted during the year.	Length of roads and canals which have failed during the year.	Length of roads and canals fully stocked with trees or plants alive at end of the year.	REMARKS.
ARID.		*Miles and decimals.*	*Miles and decimals.*	*Miles and decimals.*	*Miles and decimals.*	*Miles and decimals.*	
Muzaffargarh ...	1887-88	294·35	84 25	8·20	·77	91·68	
	1888-89	294·35	91 68	6·38	·51	97·55	
	1889-90	294.35	97 55	4·25	1·00	100·80	
Mooltan ...	1887-88	277 98	183·79	5·69	4·45	185·03	
	1888-89	1231·24	185 03	8·83	1·83	192·03	
	1889-90	1231·24	192 03	3·60	2·50	193 13	
Dera Ghazi Khan	1887-88	310·43	84·50	4·00	...	88·50	
	1888-89	181·72	88.50	...	63·75*	24 75	
	1889-90	114·00	24 75	...	...	24·75	* Transferred to Public Works Department.
Dera Ismail Khan	1887-88	206 00	30·24	5·00	1·60	33 64	
	1888-89	206·00	33·64	6 77	5·46	34·95	
	1889-90	206 00	34·95	1·50	8.45	28·00	
Montgomery ...	1887-88	91·00	15·15	...	...	15·15	
	1888 89	91·00	15 15	2·00	...	17·15	
	1889-90	250 00	17·15	115·85†	...	133·00	† Includes 97·85 miles due to an error corrected during the year.
Jhang ...	1887-88	246·49	26 63	9 68	3·97	32·34	
	1888-89	246·49	32·34	4·49	·82	36·01	
	1889-90	246·49	36·01	1·65	·30	37 36	
„ Municipality	1887-88	48·09	20·01	1·66	1·71	19 96	
	1888-89	48·09	19·96	3·83	2 17	21 62	
	1889-90	48·09	21 62	·19	·12	21·69	
Bannu ...	1887-88	172·04	63·87	2·31	·60	65 58	
	1888-89	172 04	65·58	4·04	1·75	67 87	
	1889-90	172·04	67·87	7·05	3 69	71 23	
Shahpur ...	1887-88	348·30	284 90	7·40	·60	291·70	
	1888-89	437·50	291 70	62 40	9·60	344·50	
	1889-90	433·72	344 50	62 98	5·20	402 28	
Hissar ...	1887-88	380·52	92·37	3·00	...	95 37	
	1888-89	390 14	95·37	4 00	...	99 37	
	1889-90	393·81	99·37	3·68‡	...	103 05	‡ Omission from previous years.
„ Municipality	1887-88	5·59	5·21	...	...	5 21	
	1888-89	5·59	5 21	...	...	5·21	
	1889-90	5·59	5 21	...	...	5 21	
VERY DRY.							
Ferozepur ...	1887-88	731·75	470·40	4·00	257·35	217·05	
	1888-89	731 75	217·05	268 35	...	485 40	
	1889-90	731·75	485·40	4·00	...	489·40	
Peshawar ...	1887-88	181·5	26 5	84·1	3·6	107·00	
	1888-89	260·1	107·00	86 8	23 4	170 4	
	1889-90	489·25	170·4	111·36	28·00	253 76	
„ Municipality	1889-90	5·5	...	5 5§	...	5·5	§ This figure includes 5 miles of roads stocked previous to 1887-88, and 0·5 miles planted during 1888-89, but was omitted to be shewn in previous returns. Column 5 includes 21·58 miles stocked previously, but not shewn hitherto.
Kohat ..	1887-88	2·79	1·62	·78	·12	2 28	
	1888-89	2·79	2·28	28	·12	2 44	
	1889-90	2 79	2·44	·39	·50	2 33	
Rohtak ...	1887-88	437 50	159 30	11 15	·28	170·17	
	1888 89	437 50	170 17	1 85	...	172 02	
	1889-90	461·08	172·02	25 91	...	197 93	
Lahore ...	1887-88	340·68	101·31	34 09	·95	134·45	
	1888-89	361·91	134·45	28 42	2·07	160·80	
	1889-90	374·91	160·80	13·00	2 50	171·30	
„ Municipality	1887-88	40·73	40 73	...	...	40 73	
	1888-89	40·73	40 73	...	...	40·73	
	1889-90	40 73	40·73	...	...	40·73	
Karnal ...	1887-88	241·70	57 82	...	...	57 82	
	1888 89	241 70	57 82	...	...	57 82	
	1889-90	241·70	57 82	10 00	...	67·82	
DRY.							
Jhelum ...	1887-88	261·93	193 69	15 91	2 55	207·05	
	1888-89	261·93	207 05	10·36	·85	216·56	
	1889-90	297·93	216 56	13·22	2·89	226 89	
„ Municipality	1887-88	...	8 50	...	...	8·50	
	1888 89	...	8 50	...	...	8 50	
	1889-90	16·52	8·50	3·15	·62	11·03	

STATEMENT No. V. (*a*)—concluded.

1	2	3	4	5	6	7	8
DISTRICT.	Year.	Length of roads and canals suitable for avenues.	Length of roads and canals fully stocked with trees at beginning of year.	Length of roads and canals planted during the year.	Length of roads and canals which have failed during the year.	Length of roads and canals fully stocked with trees or plants alive at end of the year.	REMARKS.
		Miles and decimals.	*Miles and decimals.*	*Miles and decimals.*	*Miles and decimals.*	*Miles and decimals.*	
Gujranwala ...	1887-88	361·50	111·50	4·00	1·25	114·25	
	1888-89	361·50	114·25	·75	2·75	112 25	
	1889-90	377·63	112·25	6·50	*32·75	86·00	* Includes 31·75 miles due to correction of previous error.
Gurgaon ...	1887-88	361·35	230 62	2 01	·30	232·33	
	1888-89	347·51	232·33	7 43	...	239 76	
	1889-90	358·76	239·76	4·60	·57	243 79	
Amritsar ...	1887-88	272·96	136·32	13·11	22 59	126 84	
	1888-89	309·23	126 84	65·33	12 67	179·50	
	1889-90	273·00	143·24	16 00	13·71	146·06	
„ Municipality	1889-90	66·00	36 26	3·00	...	39·26	
Delhi ...	1887-88	255·40	77 50	5·50	17·20	65·80	Two of the roads are planted with two lines of trees on each side, and the remaining roads with one line of trees on each side.
	1888-89	261·40	65·80	12·00	12 40	65 40	
	1889-90	261·40	65·40	13·60	2·70	76·30	
Jullundur ...	1887-88	270·09	208·29	9·00	0·25	217·04	
	1888-89	270·03	217·04	2·08	...	219 12	
	1889-90	276·52	219·12	15·65	21·12*	213·65	* 21·12 miles shown erroneously in previous years, now adjusted.
Ludhiana ...	1887-88	113·42	104·23	4·11	9·47	98·87	10,074 new trees planted to replace dead ones.
	1888-89	149·50	98·87	28·00	..	126·87	3,170 do. do.
	1889-90	149 50	126 87	3·00	...	129 87	6,621 do. do.
Rawalpindi ...	1887-88	931·40	391·74	17·84	12·87	396·71	
	1888-89	934 90	396·71	14·09	61·44	349·36	
	1889-90	987 97	349·36	30 88	43·77	336·47	
„ Municipality	1887-88	...	...	...	...	...	
	1888-89	...	...	...	...	...	
	1889-90	11·61	...	(*a*) 9·55	·17	9·38	(*a*) Includes 8·69 miles previously stocked but not shewn hitherto.
FOREST.							
Gujrat ...	1887-88	611·00	72·92	9·28	1·70	80·50	
	1888-89	611·00	80·50	5·30	1·70	84 10	
	1889-90	611·00	84·10	335·90	10·00	410 00	
Gurdaspur ...	1887-88	605 39	348 50	17·19	·90	364 79	Column 5 is made up of—
	1888-89	605·39	364·79	5 57	1·23	369 13	20·9 miles planted during the year.
	1889-90	605·39	369·13	16·21	2·11	383 23	315·0 „ stocked previously but not shewn hitherto.
Amballa ...	1887-88	378·46	259 04	12 02	6·93	264·13	335 9
	1888-89	378·46	264·13	11 84	4·98	270·99	
	1889-90	378 46	270 99	35·01	47·25	258 75	
Sialkot ...	1887-88	816·00	439 50	...	...	439·50	Column 5 shows very little progress during 1889-90 which is due to Establishment for the greater part having been engaged in filling up gaps in existing avenues and maintenance.
	1888-89	816·00	439 50	...	...	439 50	
	1889 90	816·00	439 50	9·50	...	449 00	
„ Municipality	1887-88	1·50	...	·50	...	·50	
	1888-89	1·50	·50	·38	...	·88	
	1889-90	2·50	·88	1·12	...	2·00	
Hoshiarpur ...	1887-88	440·05	353·38	...	...	353 38	
	1888-89	447·62	353·38	4·78	...	358 16	
	1889-90	447·62	358·16	53·00	...	411·16	
Simla ...	1887-88	0·94	0 94	...	...	0·94	
	1888-89	0 94	0·94	...	0·94	...	
	1889-90	...	...	...	...	...	
Hazara ...	1887-88	47 00	14·20	1·20	1·20	14 20	
	1888-89	47·00	14 20	·48	·48	14·20	
	1889-90	47·00	14·20	1·25	1·25	14 20	
„ Municipality	1887-88	4·50	3·50	1·53	1·03	4·00	
	1888-89	4·50	4·00	·31	·31	4 00	
	1889-90	4 50	4·00	·07	·07	4·00	
Kangra ...	1887-88	501·59	299·81	22·96	12·29	310·48	
	1888-89	501·59	310·48	18 78	10 94	318 32	
	1889-90	501 59	318 32	21·18	20·51	318·99	
Dharmsala Municipality.	1889-90	5·50	...	5 50	...	5 50	Column 5 includes 2·75 miles road as previously stocked, and 2 75 miles as stocked during 1889-90.
Total ...	1887-88	10,591·86	5,002·78	317 22	366·53	4,953·47	
	1888-89	11,690 64	4,953 47	675·92	222 17	5,407 22	
	1889-90	12,239·44	5,407·22	969 33	251·75	6,124 80	

NOTE.—The difference between length of roads shewn in this statement and that in the printed statements of 1887-88 and 1888-89, is due to the reduction from "length of single lines in feet" to "length of roads in miles.

STATEMENT No. V. (*b*).

Progress Statement of Avenues in the Canal Divisions of the Punjab for the years 1887-88 *to* 1889-90.

1	2	3	4	5	6	7	8
CANAL DIVISIONS.	Year.	Length of roads and canals suitable for avenues.	Length of roads and canals fully stocked with trees at beginning of year.	Length of roads and canals planted durnig the year.	Length of roads and canals which have failed during the year.	Length of roads and canals fully stocked with trees or plants alive at end of the year.	REMARKS.
		Miles and decimals.	*Miles and decimals.*	*Miles and decimals.*	*Miles and decimals.*	*Miles and decimals.*	
Bari Doab Canal, 1st Division.	1887-88	179·70	132·70	4·20	0·30	136·60	In all these avenues there are two lines of trees—shisham, kikar, tun, siris, mango, and mulberry.
	1888-89	179·70	136·60	4·80	...	141·40	
	1889-90	179·70	141 40	3·70	...	145·10	
Bari Doab Canal, 2nd Division.	1887-88	176 33	161·54	2 29	0·12	163·71	There are two rows of line trees—one on each bank of the canal.
	1888-89	176·33	163·71	2·06	0 62	165·15	
	1889-90	176·33	165·15	1·25	0 20	166·20	
Bari Doab Canal, 3rd Division.	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	The 3rd Division, Bar Doab Canal, was only sanctioned from 1st April 1890. A report was therefore not submitted.
	1888-89						
	1889-90						
Upper Sutlej Division, Inundation Canals.	1887-88	260·88	238 98	...	...	238·98	
	1888-89	251·88	238·98	...	...	238 98	
	1889-90	442 37	238 98	50·91	6·64	283·25	
Lower Sutlej and Chenab Division, Inundation Canals	1887-88	991·60	990 20	0·44	0 04	990 60	Column 6 includes 98·87 acres due to previous errors.
	1888-89	991·00	990·60	0·27	...	990·87	
	1889-90	991·00	990·87	...	98·87	892·00	
Dera Ghazi Khan Division, Indus Canals.	1887-88	518·09	149·74	6·32	·90	155 16	
	1888-89	522·09	155·16	10·20	3·33	162·03	
	1889 90	523·34	162·03	10·12	6·12	166·03	
Muzaffargarh Canal Division.	1887-88	45·75	8·35	4·16	·76	11·75	Column 6 includes 1 acre carried away by river during 1889-90.
	1888-89	53·15	11·75	8·35	4·80	15·30	
	1889-90	115·20	15 30	36·35	11·57	40·08	
Western Jumna Canal, Karnal Division.	1887-88	453·30	385·02	3·09	·93	387·18	
	1888-89	453·30	387·18	15 27	4·63	397·82	
	1889-90	453·30	397·82	16 35	28 56	385·61	The entry of 28·56 miles in column 6 is due to the correction of previous error.
Western Jumna Canal, Delhi Division.	1887-88	1,417·68	420·39	9·60	...	429·99	
	1888-89	1,592 75	429·99	11·19	...	441·18	
	1889-90	1,321·80	441·18	30 43	20 35	451·26	
Sirhind Canal Ferozepur Division.	1887-88	314·40	56 02	40·80	1·80	95·02	
	1888-89	314·40	95·02	13·80	18·92	89 90	
	1889-90	314·40	89·90	10·60	13·90	86·60	The length in column 6 made up of— Abohar branch 12·90 miles. Bhatinda „ 1·00 „ 13·90
Sirhind Canal, Ludhiana Division.	1887-88	171 35	79·46	17·57	1 29	95·74	
	1888-89	171·35	95·74	0·78	12·12	94·40	
	1889-90	171·35	94·40	13·70	2·12	95·98	
Sirhind Canal, Patiala Division.	1887-88	158·50	47·99	25·68	29·66	44·01	(*a*) Includes 19·60 due to previous error.
	1888-89	178·34	44·01	28 90	8·58	64·33	
	1889-90	221·34	64·33	44 24	(*a*) 36·56	72·01	
Chenab Weir Division.	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	This division only having been formed in December 1889, there were no arboricultural operations.
	1888-89						
	1889-90						
Chenab Canal Division.	1887-88	49·43	...	4·07	0·57	3·50	
	1888-89	49 43	3·50	3 79	...	7 29	
	1889-90	91·66	7·29	48·27	0·20	55 36	
Swat River Canal Division.	1887-88	157·54	5·79	...	...	5·79	
	1888-89	157·54	5·79	44·14	4·20	45 73	
	1889-90	154·50	45·73	50 00	...	95·73	
Total ...	1887-88	4,893·95	2,676·18	118·22	36·37	2,758·03	
	1888-89	5,091·26	2,758·03	143·55	47·20	2,854·38	
	1889-90	5,156·29	2,854·38	315·92	235·09	2,935 21	

STATEMENT No. V (*c*).

Progress Statement of Avenues in Provincial Divisions, Public Works Department, for the years 1887-88 *to* 1889-90.

1	2	3	4	5	6	7	8
Provincial Division.	Year.	Length of roads and canals suitable for avenues.	Length of roads and canals fully stocked with trees at beginning of year.	Length of roads and canals planted during the year.	Length of roads and canals which have failed during the year.	Length of roads and canals fully stocked with trees or plants alive at end of the year.	Remarks.
		Miles and decimals.	*Miles and decimals.*	*Miles and decimals.*	*Miles and decimals.*	*Miles and decimals.*	
Peshawar Division	1887-88	297·55	187·81	77·93	43·19	222·55	
	1888-89	297·55	222·55	33·51	9·45	246·61	
	1889-90	298·77	246·61	31·00	37·46	240 15	
Rawalpindi Division.	1887-88	196·64	36·43	28·72	1·76	63 39	
	1888-89	196 64	63·39	23·33	0·65	86 07	
	1889-90	193·14	86 07	49·07*	6 24†	128 90	* This figures includes 3·16 miles planted during the year. 12·41 „ error in previous years. 33·50 „ transferred from Gujranwala Division. 49·07 „
Kohat North-West Frontier Road Division.	1887-88	88·51	9·12	...	...	9·12	
	1888-89	88·51	9·12	2·13	...	11·25	
	1889-90	88·51	11·25	6·06	1·95	15·36	
Gujranwala Independent Division.	1887-88	83·75	81·97	...	5 23	76·74	† Due to error in previous years. 33·50 acres shewn in column 6 have been transferred to Rawalpindi Provincial Division during 1889-90.
	1888-89	83 75	76·74	...	·19	76 55	
	1889-90	86 10	76·55	2 40	33 50	45·45	
Jullundur Division	1887-88	237·29	90·68	10·43	2 31	98 80	
	1888-89	237·29	98·80	13·33	5·78	106·35	
	1889-90	237·29	106 35	25·73	5 70	126 38	
Simla Division ...	1887-88	224·00	*Nil.*	*Nil.*	*Nil.*	*Nil.*	There are no arboricultural operations in this Division.
	1888-89	224·00					
	1889-90	224 00					
Amballa Division	1887-88	156 40	102·63	8 55	4·87	106·31	
	1888-89	156·40	106·31	5·80	1·73	110·38	
	1889-90	156·40	110·38	1·65	(*a*) 8·70	103·33	Miles. (*a*) Failure ... 3·38 Correction of entry in last year's returns 5 32 8·70
Delhi Division ...	1887-88	97·15	78·17	1·07	1·26	77·98	
	1888-89	97·15	77·98	·74	·70	78·02	
	1889-90	95·50	78·02	2·04	12·56	67·50	The actual length which failed during 1889-90 was 3·41 miles, but 9·15 miles had to be added in column 6 to adjust previous error.
Dera Ismail Khan Division.	1887-88	79·50	5 21	...	...	5 21	
	1888-89	80·48	5·21	2·16	...	7 37	
	1889-90	141·48	7·37	1·01	(*b*) 2·18	6 20	(*b*) These avennes of trees have died out simply for want of water.
Dera Ghazi Khan Division.	1887-88	26·00	9·41	1·45	1·37	9·49	
	1888-89	183 50	9·49	72·35*	32·26	49·58	
	1889-90	197·50	49·58	9·33	4·32	54 59	* Includes area transferred from the district.
Lahore Division...	1887-88	188·54	102·87	11·94	3·19	111 62	
	1888-89	188·54	111·62	10 17	2·00	119·79	
	1889-90	190·75	119·79	15·97	3·25	132·51	
Mooltan Division	1887-88	7·70	4·79	1·70	1 27	5·22	
	1888-89	7·70	5·22	1·78	0·82	6.18	
	1889-90	7·70	6·18	0·32	...	6 50	The closing balance at end of 1889-90 is made up as below :— 1·10 miles of 1 row of trees. 3·24 „ 2 „ 0·98 „ 3 „ 1·18 „ 4 „ 6·50
Total ...	1887-88	1,683·03	709·09	141·79	64·45	786·43	
	1888-89	1,681·49	786 43	165 30	53·58	898 15	
	1889-90	1,917·54	898 15	144·58	115·86	926·87	

STATEMENT No. VI (*a*).

Income from Arboriculture in the Districts of the Punjab during the years 1887-88 *to* 1889-90.

District.	Year.	Ornamental gardens.	Nurseries.	Plantations.	Groves and Avenues.	Miscellaneous	Total.	Remarks.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Muzaffargarh ...	1887-88	441	111	...	567	5	1,124	
	1888-89	532	138	...	345	43	1,058	
	1889-90	365	55	...	486	10	916	
Mooltan	1887-88	1,790	1	...	393	...	2,184	
	1888-89	1,800	15	...	200	1	2,016	
	1889-90	1,768	78	...	392	12	2,250	
Dera Ghazi Khan ...	1887-88	234	...	...	37	...	271	
	1888-89	279	...	...	130	...	409	
	1889-90	240	...	...	...	...	240	
Dera Ismail Khan...	1887-88	...	...	...	13	5	18	
	1888-89	...	...	...	...	...	...	
	1889-90	...	...	...	...	...	...	
Montgomery ...	1887-88	69	...	...	739	...	808	
	1888-89	316	...	...	527	...	843	
	1889-90	1,051	...	...	333	15	1,399	
Jhang ...	1887-88	541	...	619	71	317	1,548	
	1888-89	684	...	75	154	529	1,442	
	1889-90	664	...	96	460	439	1,659	
,, Municipality	1887-88	185	...	...	7	...	* 192	* Rs. 192 omitted in previous returns.
	1888-89	163	...	...	7	...	† 170	† Rs 170 omitted in previous returns.
	1889-90	215	...	...	8	...	223	
Bannu	1887-88	511	...	5,306	1,755	...	7,572	
	1888-89	479	...	3,004	3,915	...	‡ 7,398	‡ Erroneously shewn Rs- 7,788 in Annual statement for 1888-89.
	1889-90	300	...	2,086	177	...	2,563	
Shahpur	1887-88	1,283	48	...	3,783	...	5,114	
	1888-89	1,262	38	...	3,452	...	4,752	
	1889-90	1,269	43	...	4,120	...	5,432	
Hissar	1887-88	50	211	...	389	...	650	
	1888-89	57	113	...	409	...	579	
	1889-90	82	60	...	274	...	416	
,, Municipality	1887-88	1,086	...	...	...	...	‖ 1,086	
	1888-89	1,248	...	...	...	...	1,248	
	1889-90	816	...	...	...	...	816	
Ferozepur ...	1887-88	...	...	...	1,496	...	1,496	
	1888-89	...	37	...	6,755	...	6,792	
	1889-90	...	20	...	5,485	23	5,528	
Peshawar ...	1887-88	397	...	...	509	...	906	
	1888-89	304	...	...	150	...	454	
	1889-90	557	...	...	264	...	821	
,, Municipality	1887-88	2,902	...	...	...	...	§ 2,902	§ Rs. 2,902 omitted in previous returns.
	1888-89	2,676	...	...	...	...	‖ 2,676	‖ Rs. 2,676 omitted in previous returns.
	1889-90	2,361	...	...	99	...	2,460	
Kohat ...	1887-88	...	...	...	...	...	...	
	1888-89	...	...	...	...	...	...	
	1889-90	...	...	...	...	23	23	
Rohtak	1887-88	20	10	...	356	83	469	
	1888-89	...	18	...	607	43	668	
	1889-90	...	...	...	539	4	543	
Lahore	1887-88	...	...	...	397	...	397	
	1888-89	201	...	...	826	...	1,027	
	1889-90	635	22	...	183	376	1,216	
,, Municipality	1887-88	8,792	...	...	...	820	¶ 9,612	¶ Rs. 9,612 omitted in previous returns.
	1888-89	7,693	...	...	...	1,239	* 8,932	* Rs. 8,932 omitted in previous returns.
	1889-90	8,996	...	...	...	728	9,724	
Karnal	1887-88	...	40	...	44	3	87	
	1888-89	...	211	...	240	4	455	
	1889-90	...	110	...	908	307	1,325	
Jhelum	1887-88	610	...	881	...	69	1,560	
	1888-89	504	...	899	...	89	1,492	
	1889-90	723	...	795	...	303	1,821	

STATEMENT No. VI (*a*).—concluded.

District.	Year.	Ornamental Gardens.	Nurseries.	Plantations.	Groves and Avenues.	Miscellaneous.	Total.	Remarks.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Gujranwala ...	1887 88	509	...	...	283	...	792	
	1888-89	1,077	...	...	358	...	1.435	
	1889-90	1,435	...	...	511	69	2,015	
Gurgaon ...	1887-88	185	33	114	2,565	...	2,897	
	1888-89	285	15	67	4,167	10	4,544	
	1889-90	287	98	46	3,300	10	3,741	
Amritsar ...	1887-88	151	20	...	1,317	...	1,488	
	1888-89	2.553	593	...	3,730	...	6.876	
	1889-90	237	2	...	2,111	26	2,376	
„ Municipality	1889-90	3,695	73	...	1,792	343	5,903	
Delhi ...	1887-88	3,403	...	...	467	...	3,870	
	1888-89	4,639	...	6,114	1,475	...	12,228	
	1889-90	3,103	...	7,642	440	3,640	14,825	
Jullundur ...	1887-88	909	426	...	4,253	...	5,588	
	1888-89	904	330	...	7,526	...	8,760	
	1889-90	545	365	...	6,289	...	7,199	
Ludhiana ...	1887-88	504	234	...	2,318	...	3,056	
	1888-89	445	...	...	3,556	202	4,203	
	1889-90	75	96	...	3,051	831	4,053	
Rawalpindi ...	1887-88	3,625	...	...	396	...	4,021	
	1888-89	3,746	9	...	1,112	...	4,867	
	1889-90	2,761	...	...	1,971	...	4,732	
„ Municipality	1887-88	...	...	...	...	...	...	
	1888-89	...	...	...	...	...	...	
	1889-90	786	29	...	155	...	970	
Gujrat ...	1887-88	80	...	...	4,100	...	4,180	
	1888-89	123	19	...	3,178	...	3,320	
	1889-90	36	6	...	3,095	81	3,218	
Gurdaspur ...	1887-88	581	161	...	3,312	...	4,054	
	1888-89	429	269	...	1,648	...	2,346	
	1889-90	602	242	...	3,598	...	4,442	
Amballa	1887-88	187	...	...	2,616	...	2,803	
	1888-89	205	..	...	4,292	...	4,497	
	1889-90	254	...	...	3,679	...	3,933	
Sialkot	1887-88	2,066	...	...	10,272	...	12,338	
	1888 89	2,068	4	...	15,686	...	17,758	
	1889 90	2,647	2	2	11,219	293	14,163	
Hoshiarpur ...	1887 88	408	...	...	3,977	...	4,385	
	1888-89	547	...	...	4,675	...	5,222	
	1889-90	2,928	...	...	3,934	276	7,138	
Simla	1887-88	4,309	...	...	2,100	...	6,409	
	1888-89	8.030	314	...	3,268	...	11,612	
	1889-90	7,932	...	3,312	...	1,097	12,341	
Hazara	1887-88	...	67	71	37	...	175	
	1888-89	...	32	117	47	...	196	
	1889-90	...	236	129	10	10	385	
„ Municipality	1887-88	1,933	148	47	165	...	2,293	
	1888-89	1,875	46	50	171	...	2,142	
	1889-90	2,122	115	54	285	...	2,576	
Kangra ...	1887-88	174	14	...	218	...	406	
	1888-89	204	...	...	622	...	826	
	1889-90	192	...	...	434	...	626	
„ Municipality	1889-90	109	...	...	...	...	109	
Total ...	1887-88	37.935	1,524	7,038	48,952	1,302	96,751	Includes Rs. 12,706 omitted in previous returns.
	1888-89	45,328	2,201	10,326	73,228	2,160	1,33,243	
	1889-90	49,782	1,652	14,162	59,639	8,916	1,34,151	Includes Rs. 11,778 omitted in previous returns.

STATEMENT No. VI. (*b*).

Income from Arboriculture in the Canal Divisions during the years 1887-88 *to* 1889-90.

Canal Divisions.	Year.	Ornamental gardens.	Nurseries.	Plantations.	Groves and Avenues.	Miscellaneous.	Total.	Remarks.
		Rs.	Rs.	Rs.	Rs	Rs.	Rs.	
Bari Doab Canal, 1st Division.	1887-88	200	...	7,828	555	...	8,583	
	1888-89	...	...	13,903	44	...	13,947	
	1889-90	...	...	18,060	...	1,396	19,456	
Bari Doab Canal, 2nd Division.	1887-88	6	...	9,107	...	7,114	16,227	
	1888-89	16	...	11,877	12	7,448	19,353	
	1889-90	14	...	5,732	7	6,487	12,240	
Bari Doab Canal, 3rd Division.	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89							
	1889-90							
Upper Sutlej Division, Inundation Canals.	1887-88	...	...	902	...	2,766	3,668	Erroneously printed Rs. 3662 in Annual Statement for 1887-88.
	1888-89	...	...	602	...	3,000	3,602	
	1889-90	...	...	495	...	2,736	3,231	
Lower Sutlej and Chenab Division, Inundation Canals	1887-88	...	...	...	4,053	220	4,273	Annual Statement for 1887-88 shows erroneously Rs. 3,452.
	1888-89	...	..	...	9,266	365	9,631	
	1889-90	...	...	...	15,666	2,156	17,822	
Dera Ghazi Khan Division, Indus Canals.	1887-88	...	...	...	872	...	872	
	1888-89	...	1	...	737	...	738	
	1889-90	...	10	...	1,531	46	1,587	
Muzaffargarh Canal Division.	1887-88	...	...	...	4,216	29	4,245	
	1888-89	...	...	...	4,193	3	4,196	
	1889-90	...	...	...	6,774	17	6,791	
Western Jumna Canal, Karnal Division.	1887-88	...	...	...	14,528	...	14,528	Includes income from plantation which can not be separated.
	1888-89	...	...	...	7,283	...	7,283	
	1889-90	...	...	...	9,576	...	9,576	
Western Jumna Canal, Delhi Division.	1887-88	...	...	..	12,516	...	12,516	
	1888-89	..	...	...	5,873	...	5,873	
	1889-90	...	...	...	6,898	...	6,898	
Sirhind Canal, Ferozepur Division.	1887-88	...	...	...	233	182	415	
	1888-89	...	...	...	455	1,368*	1,823	* Omitted in Annual Returns.
	1889-90	...	...	555	...	1,661	2,216	
Sirhind Canal, Ludhiana Division.	1887-88	...	101	...	7,195	...	7,296	
	1888-89	...	10,391	...	2,836	...	13,227	
	1889-90	...	...	12,709	...	4,099	16,808	
Sirhind Canal, Patiala Division.	1887-88	...	...	...	...	...	2,833	Detail not obtainable by sub-heads.
	1888-89	...	...	...	...	...	3,754	
	1889-90	...	...	2,960	1,669	...	4,629	
Chenab Weir Division.	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89							
	1889-90							
Chenab Canal Division.	1887-88	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1888-89							
	1889-90							
Swat River Canal Division.	1887-88	...	...	2	...	...	2	
	1888-89	...	...	10	...	12	22	
	1889-90	...	...	68	...	13	81	
Total ...	1887-88	206	101	17,839	44,168	10,311	75,458	
	1888-89	16	10,392	26,392	30,699	12,196	83,449	
	1889-90	14	10	40,579	42,121	18,611	1,01,335	

STATEMENT No. VI. (*c*).

Income from Arboriculture in the Provincial Divisions during the years 1887-88 *to* 1889-90.

Provincial Division.	Year.	Ornamental gardens.	Nurseries.	Plantations.	Groves and avenues.	Miscellaneous.	Total.	Remarks.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Peshawar Division	1887-88	8	...	...	452	...	460	
	1888-89	...	...	...	482	...	482	
	1889-90	...	...	...	1,616	...	1,616	
Rawalpindi Division	1887-88	...	...	...	90	1,421	1,511	
	1888-89	...	...	...	199	1,520	1,719	
	1889-90	...	...	...	2,282	2,434	4,716	
Kohat North-Western Frontier Road Division.	1887-88	...	...	...	...	...	...	
	1888-89	...	...	...	...	...	...	
	1889-90	...	...	...	...	44	44	
Gujranwala Independent Sub-division.	1887-88	...	...	...	2,121	1,883	4,004	Figures for 1887-88 were not supplied in the Annual Return by mistake of Executive Engineer.
	1888-89	...	...	...	3,698	1,743	5,441	
	1889-90	...	...	...	343	5	348	
Jullundur Division	1887-88	...	65	...	6,684	...	6,749	
	1888-89	...	6	...	5,588	...	5,594	
	1889-90	17	...	...	3,587	3,250	6,854	
Simla Division ...	1887-88	Nil.	Nil.	Nil.	Nil	*Nil.*	*Nil.*	
	1888-89							
	1889-90							
Amballa Division ...	1887-88	1	...	...	2,177	984	3,162	
	1888-89	21	...	...	1,909	1,857	3,787	
	1889-90	9	...	...	5,654	1,843	7,506	
Delhi Division ...	1887-88	...	...	...	...	...	...	Included in Amballa Division.
	1888-89	...	...	...	898	4	902	
	1889-90	...	...	...	751	...	751	
Dera Ismāil Khan Division.	1887-88	....	...	...	137	...	137	
	1888-89	...	...	...	231	...	231	
	1889-90	...	...	...	165	...	165	
Dera Ghazi Khan Division.	1887-88	...	...	...	103	...	103	Provincial Statement for 1887-88 is blank, as the Divisional Statement was not received in time. Annual Statement for 1888-89 shows erroneously Rs. 138.
	1888-89	...	...	...	409	...	409	
	1889-90	..	...	...	380	...	380	
Lahore Division ...	1887-88	...	...	...	3,941	...	3,941	
	1888-89	...	...	...	3,450	...	3,450	
	1889-90	2	...	29	1,530	2,332	3,890	
Mooltan Division ...	1887-88	...	...	...	...	...	...	
	1888-89	...	...	...	20	...	20	
	1889-90	...	...	...	13	...	31	
Total ...	1887-88	9	65	...	15,705	4,288	20,067	
	1888-89	21	6	...	16,884	5,124	22,035	
	1889-90	28	...	29	16,321	9,908	26,286	

STATEMENT No. VII (*a*).

Expenditure on Arboriculture in the Districts of the Punjab during the years 1887-88 *to* 1889-90.

1	2	3	4	5	6	7	8	9	10	11	12	13
		Works.								Establishment.		
		Ornamental gardens.		*Nurseries.*		*Plantation and afforestation.*		*Groves and avenues.*				
District.	Year.	Maintenance and repairs of existing gardens.	Extension of gardens.	Maintenance and repairs of existing nurseries	Extension of nurseries.	Maintenance and repairs of existing plantations and afforestation.	Extension of plantations and afforestation.	Maintenance and repairs of existing groves and avennes.	Extension of groves and avennes.	General Supervising Establishment, including Office Establishment.	Total	Remarks.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs	Rs	Rs.	
Muzaffargarh ...	1887-88	3,411	...	72	...	...	...	3,923	1,571	...	8,977	
	1888-89	3.343	...	69	...	...	...	3,603	1,954	...	8,969	
	1889-90	3.061	...	72	...	...	...	3,738	1.292	...	8,163	
Mooltan ...	1887-88	6,792	...	1,324	...	...	...	2,647	240	...	11,003	
	1888-89	7,045	...	905	...	...	...	2,521	309	..	10.780	
	1889-90	6,484	...	924	...	...	...	9,888	...	...	17,296	
Dera Ghazi Khan...	1887-88	1,931	...	300	...	..	...	200	400	5,585	8,416	
	1888-89	2,334	...	7	...	5	...	...	...	6,986	9,332	
	1889-90	4,392	....	...	...	576	...	3,584	...	120	8,672	
Dera Ismail Khan...	1887-88	...	...	...	415	...	...	1,572	...	...	1,987	
	1888-89	...	...	...	...	...	...	1,895	180	...	2,075	
	1889-90	...	...	...	...	...	...	2,002	...	...	2,002	
Montgomery ...	1887-88	2.785	...	...	...	...	...	1,030	...	...	3,815	
	1888-89	1,866	...	...	...	...	...	640	121	...	2,627	
	1889-90	2.632	...	...	...	...	...	472	...	...	3,104	
Jhang ...	1887-88	3,414	138	...	...	...	...	673	577	54	4,856	
	1888-89	3,660	..	...	..	...	...	1,048	314	220	5,242	
	1889-90	3,095	...	...	...	...	...	1,804	15	262	5,176	
„ Municipalities	1887-88	984	...	...	...	...	...	249	...	...	1,233	Rs 1,233 omitted in previous returns.
	1888-89	1,008	...	...	...	...	...	478	...	...	1,486	
	1889-90	1,321	...	...	...	...	...	199	...	...	1,520	Rs. 1,486 omitted in previous returns.
Bannu ...	1887-88	1,236	...	140	...	...	...	2,844	...	...	4,220	
	1888-89	1.192	...	142	...	...	...	2,744	...	20	4,098	
	1889-90	1,235	...	82	...	...	...	2,184	...	20	3.522	
Shahpur ...	1887-88	653	2,336	34	98	...	...	117	391	817	4,446	
	1888-89	472	1,941	35	120	...	...	151	530	1,549	4,798	
	1889-90	1,529	...	229	360	...	...	974	...	1,378	4,470	
Hissar ...	1887-88	2,868	7	2,652	...	...	339	800	...	...	6,666	
	1888-89	4,237	96	2,102	262	275	149	1.134	...	...	8,255	
	1889-90	4,636	...	1,853	...	100	...	2,148	460	...	9,197	
Ferozepur ...	1887-88	...	...	...	...	...	...	8,239	...	1,034	9,273	
	1888-89	...	...	...	...	...	...	7,773	...	1,020	8,793	
	1889-90	...	...	...	...	...	...	8,762	323	1,044	10,129	
Peshawar ...	1887-88	3,321	..	...	45	...	...	2.764	654	...	6.784	
	1888-89	4,044	...	...	38	...	...	2.772	1,795	...	8,649	
	1889-90	3,164	354	...	...	...	...	4,463	950	...	8,931	
„ Municipality	1887-88	5,664	...	...	...	...	...	294	196	...	6,154	Rs. 6,154 omitted in previous returns.
	1888-89	6,054	...	...	...	...	...	367	516	...	6,937	
	1889-90	4,994	115	...	...	...	...	499	...	...	5,608	Rs. 6,937 omitted in previous returns.
Kohat ...	1887-88	...	...	...	...	...	...	312	47	...	359	
	1888-89	...	...	155	...	...	..	155	...	...	310	
	1889-90	...	...	145	194	...	...	145	36	...	520	
Robtak ...	1887-88	54	...	134	22	...	...	5.444	330	276	6,260	
	1888-89	...	...	305	70	...	...	4.682	213	276	5,546	
	1889-90	...	...	467	7	...	...	4,333	251	216	5,274	
Lahore ...	1887-88	60	...	...	92	1,742	1,823	...	...	...	3,717	
	1888-89	...	...	60	33	...	...	2,011	1,240	...	3,344	
	1889 90	490	98	...	5	...	27	357	352	3,006	4,335	
„ Municipality	1887-88	13,884	...	24	...	..	...	...	...	240	14,148	Rs. 14,148 omitted in previous returns.
	1888-89	15,290	...	24	..	...	...	...	...	192	15,506	
	1889-90	13,631	...	24	...	...	...	25	...	877	14,557	Rs. 15,506 omitted in previous returns.
Karnal ...	1887-88	...	...	630	...	...	...	1,591	...	...	2,221	
	1888-89	...	...	877	...	...	...	2,092	...	135	3,104	
	1889-90	...	...	887	...	...	...	3,177	302	878	5,244	
Jhelum ...	1887-88	3,416	..	...	...	...	...	...	175	2,166	5,757	
	1888-89	3,394	...	...	...	...	...	...	...	2,434	5,828	
	1889-90	3,041	...	...	...	...	...	...	...	2,634	5,675	

STATEMENT No. VI (*d*).—concluded.

1	2	3	4	5	6	7	8	9	10	11	12	13
		Works.										
		Ornamental Gardens		*Nurseries.*		*Plantation and Afforestation.*		*Groves and Avenues*				
District.	Year.	Maintenance and repairs of existing gardens.	Extension of gardens.	Maintenance and repairs of existing nurseries.	Extension of nurseries	Maintenance and repairs of existing plantations and afforestation.	Extension of plantations and afforestation.	Maintenance and repairs of existing groves and avenues.	Extension of groves and avenues.	Establishment. General Supervising Establishment, Office including Establishment.	Total.	Remarks.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Gujranwala ...	1887-88	3,046	...	...	...	...	...	3,471	...	372	6,889	
	1888-89	2,784	...	...	...	...	...	3,593	...	480	6,857	
	1889-90	2,122	...	...	...	...	...	3,529	...	455	6,106	
Gurgaon ...	1887-88	1,279	...	429	...	1,432	...	3,839	1,310	144	8,433	
	1888-89	1,376	...	519	...	1,677	...	4,171	1,439	144	9,326	
	1889-90	1,411	...	569	...	1,543	...	4,039	1,346	144	9,052	
Amritsar ...	1887-88	728	...	382	...	...	...	6,886	...	...	7,996	
	1888-89	8,185	...	1,181	...	...	...	8,896	...	...	18,262	
	1889-90	942	...	129	...	...	...	5,623	...	876	7,570	
„ Municipality ...	1889-90	11,012	...	...	..	...	...	1,586	...	420	13,018	
Delhi ...	1887-88	122	...	1	...	...	...	83	188	12,317	12,711	
	1888-89	1,457	...	...	...	50	...	425	126	11,084	13,142	
	1889-90	2,687	...	220	...	870	...	285	...	8,917	12,979	
Jullundur ...	1887-88	3,576	...	2,199	...	467	...	1,426	798	...	8,466	
	1888-89	3,304	...	959	...	20	...	3,702	625	...	8,610	
	1889-90	2,607	...	1,101	...	47	...	4,847	388	...	8,990	
Ludhiana ...	1887-88	996	...	1,462	159	...	...	4,364	718	84	7,783	
	1888-89	1,506	..	1,569	...	...	288	5,617	956	84	10,020	
	1889-90	1,641	...	1,573	...	...	...	6,874	486	98	10,672	
Rawalpindi ...	1887-88	5,289	...	1,000	...	..	....	192	41	...	6,522	
	1888-89	4,899	...	1,337	...	...	...	165	...	...	6,401	
	1889-90	1,698	...	258	...	....	...	512	107	...	2,575	
„ Municipality	1887-88	...	...	...	...	...	...	...	...	...	...	
	1888-89	...	...	...	...	..	.	...	...	...	...	
	1889-90	2,496	...	...	...	...	...	455	...	120	3,071	
Gujrat ...	1887-88	1,376	...	...	168	...	...	1,370	300	156	3,370	
	1888-89	1,032	...	...	60	...	...	1.600	300	156	3,148	
	1889-90	988	...	...	27	...	...	1,515	300	156	2,986	
Gurdaspur ...	1887-88	1,376	...	480	..	...	...	4,140	333	660	6,989	
	1888-89	1,591	...	567	...	...	...	4,140	...	660	6,958	
	1889-90	1,600	...	534	...	...	...	4,748	...	410	7,292	
Amballa ...	1887-88	1,412	...	...	...	...	...	2,636	...	...	4,048	
	1888-89	1,476	...	...	...	...	...	3.284	...	...	4,760	
	1889-90	1.651	....	...	...	....	...	3,403	...	...	5,054	
Sialkot ...	1887 88	3,780	...	1,248	22	...	...	4,062	109	590	9.811	
	1888-89	4,365	...	797	13	...	...	5,470	198	1.143	11.986	
	1889-90	3,631	...	549	442	...	...	5,126	452	1,045	11.245	
Hoshiarpur ...	1887-88	1,498	...	156	...	...	...	6,171	...	...	7,825	
	1888-89	1,103	...	178	...	...	...	6.401	...	...	7,682	
	1889-90	1,299	803	120	...	...	...	5.863	283	354	8,722	
Simla ...	1887-88	2,285	...	51	...	...	...	2,458	...	4,090	8.884	
	1888 89	3,841	...	...	...	..	...	2,736	...	4,140	10,717	
	1889-90	3,975	2,180	277	...	2,627	125	...	...	4,528	13,712	
Hazara ...	1887-88	120	...	246	...	249	...	81	...	...	696	
	1888-89	120	...	245	...	211	...	77	...	...	653	
	1889-90	120	...	232	....	220	..	72	...	...	644	
„ Municipality	1887-88	1 659	...	74	...	69	...	11	...	...	1,813	
	1888 89	1,502	...	2	...	66	...	...	...	...	1.570	
	1889-90	1,477	...	...	...	...	...	61	...	...	1,538	
Kangra ...	1887-88	599	...	343	...	...	...	200	450	330	1.922	
	1888-89	849	...	123	...	...	...	400	443	374	2,189	
	1889-90	1,077	90	1.162	216	30	434	447	312	210	3,978	
„ Municipality	1889-90	293	..	566	...	...	...	...	...	...	859	
Total ...	1887-88	79,614	2,481	13,381	1,021	3,959	2,162	74.089	8,828	28,915	*2,14,450	*Includes Rs. 21,535 omitted in returns for 1888-89.
	1888-89	93,329	2.037	12,158	596	2,304	437	84,743	11,259	31,097	†2,37,960	†Includes Rs. 23,929 omitted in returns for 1888-89.
	1889-90	96,432	3,640	11,974	1,251	6,013	586	97,739	7,655	28,168	2,53,458	

PROGRESS REPORT

ON

ARBORICULTURE IN THE PUNJAB

For the three years 1890-91 to 1892-93.

Price :—Rs. 2-4-0.

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Proceedings of the Hon'ble the Lieutenant-Governor of the Punjab, in the Forest Department,—
No. 687, dated 21st December 1893.

READ —

The Report on Arboriculture in the Punjab during the years 1890-91 to 1892-93, submitted by the Conservator of Forests with his letter No. 2249, dated 28th October 1893.

REMARKS.—The present report is the third of the series of triennial reports instituted in 1884.

2. It is satisfactory to observe that on this occasion the Conservator of Forests has not to repeat the complaint made in previous years of unpunctuality in the submission of local reports to his office, but his report did not reach the Government office in print until nearly two months after it was due. Discrepancies and inaccuracies still present themselves in many of the statistics sent up with this report, which, besides causing trouble and delay in the compiling office, raise some feeling of uncertainty as to the value of the figures eventually accepted. Many apparent instances of progress or decline in the success of operations have to be explained as merely nominal, the results previously reported being now found to have been incorrect or wrongly classified. These defects are, however, yearly lessening, and it may be hoped will soon cease.

3. The form of the report is the same as in 1887. It is divided, according to the agency engaged, into the heads of arboriculture by district agency, by Canal officers, and by Public Works officers on provincial roads. The operations carried on are classed as relating to avenues, to groves, to plantations or to nurseries.

4. Of the years to which the report belongs the first, 1890-91, was one of good climatic conditions; the second, 1891-92, was marked by an unusually long and severe hot season; but the third, 1892-93, was one of rainfall so abundant as to be sometimes excessive. On the whole therefore the triennial period can scarcely be said to have been unfavourable to arboriculture.

It will be convenient, as in former reviews, to consider together the progress made by agency of all kinds under each class of arboricultural operations.

5. The following statement shows the length of roadside and canal avenues for the present and previous triennial periods :—

	At close of 1889-90. *Miles.*	*At close of* 1892-93. *Miles.*
Under District Boards and Municipal Committees ...	6,125	6,929
Under Irrigation Department ...	2,935	2,604
Under Public Works Department, Provincial Roads ...	927	891
Total ...	9,987	10,424

The advance made by local bodies in planting district roads has been general and on the whole very satisfactory, there being few districts which have not some new work to show. Shahpur, Peshâwar, Delhi, Umballa, Jhelum, Gurdâspur and Lahore may be mentioned as districts in which marked success was obtained. Kângra, Siâlkot, Gujrânwâla, Rohtak, Mooltan and Hoshiârpur also did well.* In the Montgomery District one of the causes assigned for no progress having been made is that trees are destroyed by white ants. His Honor has in some parts of India seen a practice of tarring the stems of trees to a height of about two feet as a defence against these pests. This plan might be tried in Montgomery.

* *Note.*—The increased lengths of avenues in these districts was as follows (Statement V.) :—

Shahpur	...	...	402 to 486 = + 84
Peshâwar	...	...	254 to 368 = + 114
Delhi	...	...	76 to 152 = + 76
Umballa	...	...	259 to 324 = + 65
Jhelum	...	...	227 to 274 = + 47
Gurdâspur	...	...	383 to 427 = + 44
Lahore, including Municipal Committee	...	...	212 to 246 = + 34
Kângra	...	...	319 to 367 = + 48
Siâlkot	...	...	449 to 479 = + 30
Hoshiârpur	...	...	411 to 434 = + 23
Gujrânwâla	...	...	86 to 113 = + 27
Rohtak	...	...	197 to 222 = + 25
Mooltan	...	...	193 to 213 = + 20

The arrangement proposed by the Deputy Commissioner of Bannu, of conducting arboriculture through the zamîndârs, they being paid a fixed sum for every tree alive at the end of the season, would, as the Conservator remarks, be excellent if successful, and it is certainly worth trying. It is believed that a similar plan has before been experimentally adopted in certain localities, and, if so, His Honor would wish to be informed how it was found to work.

The Lieutenant-Governor is inclined to agree with the observation made by the Conservator in paragraph 34 that the general extension of roadside shade is of more importance than bringing a limited length of avenues to a high degree of perfection.

The proportion of newly planted avenues which failed from drought or other causes was nearly 40 per cent., a proportion which, though very large, is rather less than that of the failures in the preceding period of 1887—1890.

6. The Conservator rightly points out that the first condition of success in these and other operations is to begin with a well-considered plan and to work continuously upon a fixed system. In several districts it is noticed in the present report that more was attempted in a single year than could be successfully accomplished. The failure noticed by the Conservator in certain districts to adhere to working plans approved by proper authority should not be allowed to occur in future without due explanation. Those District Officers who have not yet prepared working plans as required by the orders in paragraph 5 of the review of last report should lose no more time in so doing. The apparent falling off in canal avenues is nominal: there was really an increase of 300 miles.

7. In the Gujrât District the same difficulty is noticed as was reported from the Râwalpindi and Siâlkot Districts in 1890, that the land-holders are opposed to roadside avenues on account of the damage which the shade (and, it might be added, the roots) of the trees cause to the adjoining crops. This hostility extends, it is stated, to the length of wilful destruction of the trees. It would be well to remedy what is certainly in some cases a grievance by resorting in those districts to the procedure described in Revenue Circular No. 32 (C), reprinted in Part IV of the Arboriculture Manual, for remitting land revenue upon a strip of land subject to the injury complained of. His Honor the Lieutenant-Governor desires that the Commissioner of the Râwalpindi Division will consider, in communication with Deputy Commissioners, whether a judicious application of this concession, coupled with the bestowal of trifling marks of favour upon the better disposed, would not place the rural population

more in sympathy with the cause of arboriculture. In the Siálkot District in 1890-91 the Deputy Commissioner, finding the district roads unnecessarily wide, has commenced planting avenues considerably inside the former limits of the road,—a device by which such complaints are of course obviated, but which cannot be of general application, though it was adopted in Gurdáspur also.

8. The statistics of areas of groves and plantations in existence are affected by the fact that the Irrigation Department has now transferred to the head of plantations all areas on canals which were formerly reckoned as groves. The following statement shows the figures under these two heads :—

	Groves.		Plantations.	
	At close of 1889-90.	At close of 1892-93.	At close of 1889-90.	At close of 1892-93.
	Acres.	Acres.	Acres.	Acres.
Under District Boards and Municipal Committees ...	4,257	4,870	2,481	3,581
Under Irrigation Department	2,964	...	10,943	16,484
Under Public Works Department, Provincial Roads ...	659	1,154	156	157
Total ...	7,880	6,024	13,580	20,222

The increase exhibited in the area of canal plantations is very large, but the Conservator explains that by allowing for transfers from other heads and for correction of errors in former statements the real increase is reduced to 598 acres. The progress which is being made on the Sirhind Canal in pushing arboriculture further and further down into the arid tract bordering on Bikaner is praiseworthy. The apparent increase in groves on provincial roads is almost wholly due to a transfer of groves from the Police Department in the Jullundur District. In district groves and plantations the largest increases are in the Shahpur and Umballa Districts.

As regards *nurseries*, it is noticed that 8 or 9 plots, with an aggregate area of 200 acres, have been established on the Chenab Canal.

9. The Conservator has nothing new to record in the matter of growing trees suitable for furnishing cattle fodder. The importance of this subject, which was urged by the Government of India in their review of the last triennial report, has not been overlooked. An enquiry was made during the past year by the Director of Land Records and Agriculture regarding the possibility of trees edible by cattle being profitably grown in Rohtak and adjoining districts where fodder famines have at times occurred. The conclusion come to, however, was that the comparative prices of cattle and of cultivated crops would not justify the cultivator in sacrificing the latter upon a contingent chance of saving the former in the event of a fodder famine ; and in this conclusion, which was supported by the Financial Commissioner, the Lieutenant-Governor generally concurred. The Local Government possesses no waste lands of any importance in the districts referred to, or indeed in any of the cis-Sutlej portion of the Province. In the country west of the Sutlej such matters are sufficiently dealt with by the Forest Department in operations which do not come within the scope of the present report.

10. The following statement summarizes the financial results of all kinds of arboricultural operations for the last two triennial periods :—

	Period.	Income.	Expenditure.	Surplus.	Deficit.
		Rs.	Rs.	Rs.	Rs.
District Boards and Municipal Committees ...	1887—1890	3,64,145	7,05,868	...	3,41,723
	1890—1893	5,25,320	8,29,574	...	3,04,254
Irrigation Department	1887—1890	2,60,242	2,17,337	42,905	...
	1890—1893	2,15,367	2,54,508	60,859	...
Provincial Roads	1887—1890	68,388	90,451	...	22,063
	1890—1893	81,137	1,38,399	...	57,262
Total ...	1887—1890	6,92,775	10,13,656	42,905	3,63,786
	1890—1893	9,21,824	12,22,481	60,859	3,61,516

It was observed in the review of the last triennial report that increased expenditure by local bodies upon arboriculture points to a greater amount of work done, and is so far a matter of satisfaction. It is still more satisfactory upon the present occasion to find that, although expenditure has been enlarged to the extent of Rs. 1,23,706, the income has developed still faster, having increased to the extent of Rs. 1,61,175, or about 44 per cent.

In the drier districts arboriculture must always, as was before remarked, be looked upon as a subject of expenditure rather than as a source of income, and this is specially true of the planting of avenues and groves. But it may be that even in those districts situations could be found where plantations might probably be made to yield profits after a few years. The success of such plantations wherever a good supply of water can be obtained is sufficiently evidenced by the financial results of the plantations established by the Irrigation Department, which in the last triennial period show a surplus of nearly Rs. 61,000 after defraying expenditure. It is satisfactory to note the financial success of the Sahjawál plantation in the Shahpur District, of the Kheruwála plantation in the driest part of the Ferozepore District, and of the Hánsi *bir*.

A reduction of useless expenditure in the Ferozepore District to the amount of Rs. 3,000 brought about by the good management of Rái Maya Dás, Extra Assistant Commissioner, deserves great commendation.

11. It may be remarked that in the present report from the Delhi District hardly any allusion is made to the scheme instituted in 1884 for taking up and planting village common lands in agreement with the proprietary bodies of villages. In the report submitted in 1890 it was mentioned that the scheme had from certain local causes not been successful up to that time, but no sufficient reason was then shown for the abandonment of the project. The undertaking was one of a nature no doubt not unlikely to meet with various unforeseen impediments, but it was in every way one of great interest and of some importance. His Honor desires that the exact causes of its having gone no further may be fully ascertained.

12. The cultivation of fruit trees is a subject belonging partly to arboriculture and partly to the Department of Agriculture, by means of which Department the distribution of improved varieties of fruit trees is carried out, and it is

dealt with in the annual report of that Department. About 1,200 young fruit trees of European sorts are annually issued to hill districts, and large numbers of other kinds to districts in the plains. Noticeable success has been obtained in many districts with Arabian, Egyptian and other superior kinds of dates, the seed of which was imported through the Director of the Botanical Department, Northern India, and also in large quantities by the late Mr. E. O'Brien when Deputy Commissioner of Ferozepore. There is reason to believe that these dates can be profitably cultivated in almost every district of the Province if the growers will give them due care while they are young. The Lieutenant-Governor regards this matter as of great importance, dates being so useful as an article of food, and His Honor would be glad if Deputy Commissioners would turn their attention to it.

13. With regard to efforts made by private persons for the development of arboriculture, very favourable accounts are received from Shahpur, where many tracts formerly covered only with stunted bushes are now said to be growing valuable timber and fruit trees, to the great advantage and comfort of the people. Twenty or more private gardens have been established in the last three years, grafts and plants are distributed by the District Board, and sometimes a gardener is lent to lay out the garden. In the Ferozepore District the planting of canal banks with tamarisk and other trees is being steadily continued by the owners of the banks, and it is also becoming common in the upland parts of that district now watered by the Sirhind Canal for private persons to plant small groves of trees for domestic use and minor building purposes. Colonel Grey, when Deputy Commissioner of the district, set an excellent example in tree-planting on the estate of the Nawáb of Mamdot, and the work which he began appears from present reports to be well kept up. That planting is not more in favour with proprietors of land in all districts seems to be attributable partly to want of patience and steadiness of purpose, or to the apathy which allows seedling trees to be browsed down by goats for want of fencing, and partly to ignorance of the best available means of growing good trees. The most practical remedy will be to prove to the people by actual demonstration in Government plantations that timber or fruit can be produced at a profit; the growing demand for the produce will in time do the rest. Meanwhile the example of the Shahpur District should be more generally followed by District Boards. Young plants should always be made available at low prices to private growers, and they should be assisted by instruction if they will accept it.

ORDER.—Ordered that the above Remarks be printed and circulated with the report as usual; also that they be published in the *Punjab Government Gazette* and forwarded with the usual number of copies of the report to the Government of India, Revenue and Agricultural Department; also that they be forwarded to the Secretary to the Government, Punjab, Public Works Department, and the Chief Engineer, Irrigation Works, Punjab, and to the Conservator of Forests, Punjab.

By order of the Hon'ble the Lieutenant-Governor,

J. M. DOUIE,

Offg. Revenue Secretary to Government, Punjab.

Punjab Government Press, Lahore—22-12-93—510.

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No. 2249.

FROM

R. H. C. WHITTALL, ESQUIRE,

Conservator of Forests, Punjab,

TO

THE REVENUE SECRETARY TO GOVERNMENT, PUNJAB.

DATED LAHORE, 28th October 1893.

SIR,

I have the honour to submit the Progress Report on Arboriculture in the Punjab for the three years 1890-91 to 1892-93. The report was ready for printing on the 26th of September, but the work of passing it through the press had to be delayed until the Annual Administration Report and Budget should be completed.

2. The reports were submitted with much greater punctuality on this than on previous occasions. The date for submission to my office by District and Public Works Officers being July 1st, only two reports, those of Jalandhar and Gurgáon Districts, had not reached me by the 1st August. I must at the same time repeat the remarks made in the previous report, that a large amount of correspondence is still entailed owing to inaccuracies in the preparation of the returns.

3. Frequently figures given in the annual statements are differently repeated in those given in the summarised triennial statements for the same years; closing balances of one year do not agree with opening balances of the next; and the figures given in reports do not agree with those in the statements. These points are so simple and have been brought to notice so frequently on previous occasions that their non-observance throws a considerable amount of needless check and correspondence on my Office establishment at a time when there is special pressure of work owing to the preparation of the Annual Forest Administration Report. The date for the submission of this latter, having been altered from 1st July to 1st October, now coincides with that for the submission of the present report. The two reports have consequently to be compiled simultaneously.

4. There have been no deviations from the plan adopted in the arrangement of subjects in the last report. Errors, however, have been corrected where possible, and it is hoped that the closing balances of the different statements exhibit fairly accurately the state of affairs at the end of the period under report.

At the same time these corrections obviously prevent the actual work of the three years from being evident from the statements. However this state of affairs will become less and less each period.

5. The main direction, in which the arboriculture of the province seems to require improvement, is in the establishment of some system on which the work should be carried out. During the previous triennial period two plans of operations, for the Hoshiárpur and Kángra districts, respectively, were drawn up and approved by the Conservator, but in the spite of the wishes of His Honour the Lieutenant-Governor as expressed in para. 5 of his review of the last report, little attention appears to have been paid to this subject in other districts; in the Delhi District a 3 years plan appears to have been drawn up. From such plans when framed more uniformity will be ensured than obtains at present, and it will be possible to guarantee that funds allotted to any particular work are not out of proportion to the operations proposed to be carried out.

A.—GENERAL REMARKS REGARDING THE SEASONS.

1. The rainfall of the period is exhibited in Statement No. 1 which gives details of the summer and winter rains. From these figures it will be seen that on the whole two out of the three years under report, *viz.*, the second and third

been abnormal. In 1891-92 the rainfall was remarkably deficient, while 1892-93 was conspicuous for very heavy rains, every district except Dera Gházi Khan being above the normal.

2. In 1890-91 while the summer rainfall was deficient in the drier districts, it was rather above the average in the moister ones. The winter rains, however, exceeded the normal in every district.

3. 1891-92 was a year of very scanty rainfall. In the summer only three districts Gurgáon, Delhi and Simla received more than the normal quantities, many districts being very much below the average. The winter rains did not improve the position, practically every district being below the normal again.

4. In 1892-93 matters were entirely reversed by an exceedingly heavy downpour both in the summer and winter, only one district in each season receiving less than the normal. It cannot, however, be said that the years under report were very favourable to arboriculture, especially in the drier districts of the province. The summer of 1891 was exceedingly severe and did a considerable amount of damage, while in many districts it appeared that the very heavy summer rains of 1892 did more harm than good.

B.—DISTRICT ARBORICULTURE BY GOVERNMENT AGENCY.

(*a*).—General.

5. The following statement shows the progress made in avenues during the past three years as well as the figures for the preceding triennial period :—

1	2	3	4	5	6
Year.	Length of road and canals suitable for avenues.	Length of Roads and Canals			
		Fully stocked at the beginning of the year or period.	Planted during the year or period.	Which failed during the year or period.	Fully stocked with plants or trees alive at the end of the year or period.
	Miles.	Miles.	Miles.	Miles.	Miles.
1887-90	12,239·44	5,002·78	1,962·47	840·45	6,124·80
1890-91	12,436·78	6,124·80	516·25	125·74	6,515·31
1891-92	12,507·26	6,515·31	368·72	212·30	6,671·73
1892-93	12,640·75	6,671·73	436·79	180·01	6,928·51
1890-93	12,640·75	6,124·80	1,321·76	518·05	6,928·51

The above shows that the net progress made during the triennial period under report has been 803·71 miles (difference of columns 4 and 5) against 1122·02 miles (difference of columns 4 and 5) in the previous period. If, however, the entries for correction of errors and for transfers be excluded, it appears that 714·42 miles were actually added against 781·24 in the previous period. At the same time it may be noted that while the operations undertaken were less by 640·71 miles (column 4) the extent of failures was less by 322·40 miles (column 5) showing a percentage of failures in the present period of about 39 against 43 in the previous one. This is still very high, but the very unfavourable season of 1891-92 not only reduced the extent of new planting (column 4) but at the same time increased the failures (column 5) as will be seen from the above table. The districts in which the principal losses occurred are Peshâwar, Delhi and Gujrât. In the first named district the cause was partly the amount of work undertaken being too great to be properly supervised. In the second a considerable length was sown up with kikar, which proved unsuccessful from failures [illegible] frost, hail-storms and browsing of cattle and goats ; and in the third (Gujrât)

the animosity of the zamíndárs in wilfully girdling and killing existing trees necessitated considerable lengths of avenues being written off as failures.

6. The annexed statement shows the progress in groves :—

1	2	3	4	5
Year.	Area of groves			
	At the beginning of the year or period.	Planted or transferred from nurseries during the year or period.	Which failed during the year or period.	Stocked with trees or plants alive at the end of the year or period.
	Acres.	Acres.	Acres.	Acres.
1887-88 to 1889-90	2,789·43	2,074·57	626·37	4,237·63
1890-91	4,256·68	252·75	30·28	4,479·15
1891-92	4,479·15	298·75	27·18	4,750·72
1892-93	4,750·72	146·94	27·62	4,870·04
1891-92 to 1892-93	4,256·68	698·44	85·08	4,870·04

As will be seen from the remarks made regarding the similar statement in the last report, any comparison between the figures entered in it and in the present return would be quite misleading. The above statement shows that out of 698 acres added only 85 failed resulting in a net increase of 613·36 acres (difference of columns 3 and 4).

7. The following statement exhibits the operations carried out in plantations :—

1	2	3	4	5	6
Year.	Area taken up for plantations at the beginning of the year or period.	Area of plantations			
		Successfully stocked at the beginning of the year or period.	Sown or planted during the year or period.	Which failed during the year or period.	Stocked at the end of the year or period.
	Acres.	Acres.	Acres.	Acres.	Acres.
1887-88 to 1889-90.	5022·42	1543·91	1426·62	547·71	2422·82
1890-91 ...	5,148·04	2,480·95	259·86	81·94	2,658·87
1891-92 ...	7,864·06	2,658·87	1,295·47	264·41	3,689·93
1892-93 ...	7,801·54	3,689·93	55·40	164·19	3,581·14
1890-91 to 1892-93.	7,801·54	2,480·95	1,610·73	510·54	3,581·14

The progress made in plantations has thus been 1,100 acres (difference of columns 4 and 5) as against 879 acres (difference of columns 4 and 5) in the last period. The large increase in 1891-92 was due mainly to correction of errors in the Delhi District. Other variations will be noticed when treating the work more in detail.

8. The following shows work done under nurseries :—

1	2	3	4	5
	Area of nurseries			
Year.	At the beginning of the year or period.	Added during the year or period.	Given up or transferred to groves during the year or period.	Remaining at the end of the year or period.
	Acres.	Acres.	Acres.	Acres.
1887-88 to 1889-90	1,536·34	192·36	1,440·61	288·09
1890-91	288·09	51·94	43·57	296·46
1891-92	296·46	308·52	17·90	587·08
1892-93	587·08	18·09	15·37	589·80
1890-91 to 1892-93	288·09	378·55	76·84	589·80

The area of nurseries at the commencement of the period was thus 288 acres (column 2); 379 acres (column 3) were added and 77 acres (column 4) were given up or failed, showing a net increase of 302 acres (difference of columns 3 and 4). The abnormally large increase in 1891-92 includes 275 acres added in Hánsi Bír in the Hissár District. Apart from this item, however, the net increase has been about 26 acres. Many districts report that existing nurseries are sufficient for their wants and others obtain their plants from private persons; so that unless some special work be undertaken no large increase in the area under nurseries need be looked for.

(*b*).—Detail of work done.

I. Avenues—Arid Districts.

9. In *Muzaffargarh* District 6·465 miles were added to the length of roads fully stocked with trees, bringing the total length of avenues at the end of the three years under review to 107·267 miles. In the previous triennial period 16·55 miles were added; the decrease in the amount of work done is partly compensated for, as explained by the Deputy Commissioner, by the fact that 5,000 trees were put out to fill up gaps.

In this connection the remarks on the Gurdáspur District avenues may be noted; in a dry climate the extension of avenues is even more necessary than in a moist one.

10. In an arid district like *Multan*, great progress cannot be looked for; still, considering the difficulties attending arboriculture and comparing the results obtained in more favoured localities, the record cannot be said to be unsatisfactory, as 20 miles have been added against 10 miles in the last triennial period.

11. At the commencement of the three years, there were 24·75 miles of avenues planted up in *Dera Gházi Khan* District. In the first two years of the period no additions were made to this length, but in 1892-93, two miles were added, bringing the total up to 26·75 out of 114 miles fit for avenues. The Deputy Commissioner states that one of the difficulties experienced has been in bringing the plants from the *sadar* nurseries, but it appears that roadside nurseries are being established near the proposed avenues, as laid down in the Manual of Arboriculture, paragraph 42.

12. The seasons under report are stated to have been fairly good as regards *Dera Ismail Khan*, a district in which arboriculture depends almost entirely upon the rainfall. Considering the difficulties of the situation, it is distinctly satisfactory to note that, though 50 per cent. of the attempted mileage failed, the length of avenues has been raised from 28 to 44 miles; these are reported to be fully stocked. The length now planted up amounts to nearly one-half of that suitable for avenues.

13. In *Montgomery* it is to be regretted that no new work was undertaken, the efforts of the establishment being directed to the filling up of blanks.

In this district it appears that roadside arboriculture is particularly difficult owing to bad soil, white ants and want of water. In the previous triennial report it was stated that 115 miles were planted in the three years, but this large increase was merely due to correction of previous years returns.

14. The season of 1892-93 was, the Deputy Commissioner of *Jhang* reports, favourable to arboriculture, but owing to lack of funds not much was undertaken. Six miles of avenue, together with the road from Jhang to Chichawatni, were transferred to the Public Works Department.

15. Considerable damage was done in 1891-92 by locusts to the mulberry trees planted along roadsides in *Bannu District*. Of 5,127 trees put out in the period under review no less than 3,420 died, mainly during 1891-92 owing to the ravages of these insects. It is under consideration to abolish most of the establishment and conduct arboricultural operations through the zamíndárs who would be paid a fixed sum for every tree alive at the end of the season. This, if practicable, would be an excellent arrangement, and the experiment should be watched with interest.

16. In Berár I achieved considerable success in the system of inducing roadside villagers to establish their own small nurseries, to fill up gaps, and really to take entire charge of the length of road contained within their village limits, by payment of money rewards in proportion to success and especially by bringing their names to the notice of Government and obtaining permission to recognize their work by the presentation of *khillats*, such as silk *lungis*.

17. Considerable progress appears to have been made in the planting of avenues in the *Shahpur District*, the total length having increased from 402 to 486 miles; part of this addition is due to correction of errors. The report states that most of the frequented roads are planted up, a distinctly creditable state of affairs. Out of a total of 551 miles suitable for avenues, only 65 miles appear to be unplanted. This condition of things is, however, not quite so satisfactory as the returns would lead one to suppose, for an inspection of the details shows that on some roads the length actually planted exceeds that entered as suitable for avenues, which latter will consequently require revision.

18. There was no increase in the length of avenues in the *Hissár District*. This is regrettable, for out of a total length of 399·40 miles suitable for avenues, only 108·26 miles have as yet been planted up. No reasons are adduced for this want of progress.

Very Dry Districts.

19. In *Ferozepore District* 19½ miles of avenues have been planted up, bringing up the total length actually stocked to 508·90 miles out of 731·75 miles suitable for avenues. It is creditable to note that there were no failures.

20. In *Peshawar District* a very large amount of work was undertaken which unfortunately was too great for the staff available to supervise, the result being that, of 186 miles newly attempted during the three years, 72 miles failed. Still the net increase of 114 miles is good progress to record. In the previous triennial period 227·26 miles were added; and as no repairs are mentioned in the report, it must be presumed that the planting of this enormous length has been so far entirely successful.

The farásh (*Tamarix articulata*) appears to be largely planted in this district and with good results, the failures with it being reduced to a minimum.

21. The three years under report were unfavourable to the progress of arboriculture in the *Kohat District*. The rain of 1892-93, though plentiful, was no[t] seasonable, and the terrible plague of locusts in the middle of the period di[d]

vast amount of damage in and about Kohát itself, near which place all the avenues already existing have been made. It is not therefore surprising to hear that out of 5,597 trees planted along roadsides in the three years, no less than 3,110 died, or 50 per cent. of the total now left. It is noted that the only tree untouched by locusts was the bakáin (*Melia azadarach*). The remarks in the report (para. 7) regarding the method of planting out are interesting.

22. 23·50 miles of avenue were attempted in the *Rohtak District*, of which 4 miles failed, bringing the total length of avenues up to 222½ miles or not quite half the length suitable for planting up.

23. 32½ miles were added to the avenues of the *Lahore District*, chiefly in the Lahore and Kasúr tahsíls. This brings the total length of avenues to nearly 193 miles. During the last triennial period 70 miles were planted up, and there still remain about 182 miles unstocked.

No additions were made by the Municipality whose operations were confined to the filling up of gaps.

24. The planting up of roadside avenues proceeds but slowly in the *Karnál District*. Out of a total of 241·70 miles suitable for avenues, 10 miles were planted in the previous triennial period, and nearly 11 in the present case, 78 miles being now completed.

Dry Districts.

25. The *Jhelum District* Board has a creditable record of 47·4 miles added to avenues against 33·2 in the last triennial period. The total length planted up in the district is 274 miles against 370 miles suitable for avenues. The Municipality have nearly stocked up all available roads. The number of trees planted was greater and the failures were less than in the preceding three years.

26. The district of *Gujránwala* began the period under report with 86 miles of avenues, and, in spite a most unfavourable year in 1891-92 when practically no progress was made, had raised this length to 113·03, making a net increase of 27 miles.

This progress is distinctly satisfactory as it appears from the statements of the preceding period that in those years only six miles of new avenues were planted up. In the Háfizabad tahsíl good results have been obtained owing to the presence of the Chenáb Canal. Elsewhere it is not so; and endeavours are being made to improve the system. No details are given of planting avenues in the Chenáb Canal colonies.

27. A considerable amount of work seems to have been taken in hand in *Gurgáon* on different roads during the three years, but the failures in 1891-92 were so large that no very great increase has been made to the total length planted up, which is now 254 miles against 244 at the beginning of the period, out of a total of 396 miles suitable for avenues. The report states that greater lengths have been taken up than could be properly supervised, and that consequently the results obtained are not at all proportional to the outlay of expenditure. Operations are therefore quite rightly being confined to what can be efficiently protected. The reductions which have been made, however, seem rather larger than absolutely required. It is intended to obtain the services of a trained Forester to work under the District Engineer.

28. The seasons were favourable in the *Amritsar District*. Notwithstanding this the avenue statement shows that out of a total of 47·77 miles attempted, only 21·79 or less than half were successful. In 1891-92 in which the rainfall is stated to have been deficient, nearly the whole length planted failed. The net increase is however more than double that of the previous triennial period. The Municipality have been much more successful.

29. The Deputy Commissioner of *Delhi* gives some interesting information as to the condition and age of avenues already planted as well as the work done on each kind of road. The result of the three years working shows that the length of avenues has been increased from 76 to 152 miles, a very creditable amount of progress. The kikar (*Acacia arabica*) sowings, however, were not very successful. With a species so sensitive to frost as the kikar there must always be a comparatively large percentage of failures when operations are conducted on an extended scale. The plants require much protection from frost even up to a considerable height. Want of success is also attributed to insufficient protection against goats.

30. The report from *Jalandhar District* shows that a length of 16·78 miles was added to the avenues in that district as against 5·5 in the previous triennial period. It is noteworthy that no failures took place in the operations of the three years. The length now planted up amounts to 230 miles out of a total of 284 available for avenues. The water-level in the wells is stated to have sunk considerably owing to the scanty rainfall for the last few years, and many large trees have died in consequence.

31. The operations of the first two years of the period in *Ludhiána* were confined to repairs, four miles were added however in 1892-93. The additions shown in the statements for 1890-91 and 1891-92 should correctly speaking have been counterbalanced by deductions in the next column, as repairs do not increase the length of avenues. The Deputy Commissioner remarks that he does not agree with the writer of the previous report in considering the advantages of roadside avenues problematical. Still it appears that want of funds will prevent any great expansion in operations at present, it being more advisable to have the roads metalled than to have them planted with avenues. It seems to me that the funds allotted for roadside arboriculture ought not to be taken out of or have any connection with those granted for the construction and maintenance of roads from the point of view of traffic.

32. The report from *Ráwalpindi District* is very meagre as compared with that submitted for the previous triennial period, but the same obstinate resistance on the part of the zamíndárs is mentioned as on the last occasion; so that apparently the scheme resolved on by the District Board to partly meet the difficulty has not been successful up to date. The proposals, however, made no provision for the protection of existing avenues outside the road limits by acquiring strips of land or otherwise. The question is a serious one, and should be looked into if the money already expended on these avenues is not to be entirely thrown away. In consequence of the opposition of the zamíndárs it has been found necessary to restrict the work.

FOREST DISTRICTS.

33. The report for the *Gujrát District* exhibits a state of affairs similar to that in Ráwalpindi. The curious way in which the zamíndárs have shown their disapproval of roadside arboriculture is worthy of note. The trees have been practically girdled at the base below the ground level, the damage not being apparent till they dry up and fall down with the first heavy storm. The shade thrown by the trees on the fields adjoining the road appears to have been the cause of the ill-feeling. The Deputy Commissioner states, however, that the supervision has been improved and that the practice may be regarded as put an end to—though no attempts have been made to remove the cause of the dissatisfaction on the part of the zamíndárs, as was proposed in Ráwalpindi. The above no doubt explains the large failure of 31 miles, in 1891-92.

34. It appears that the state of the existing avenues in the *Gurdáspur District* requires that, for the present work should be restricted, as in the past triennial period, mainly to repairs. The policy, however, of making extension of avenues give way entirely to repairs of existing ones may perhaps be carried too far. Avenues are undoubtedly meant to furnish shade to travellers, and it is surely better to have some shade on a large mileage of road than spend all one's resources on the perhaps narrow idea of perfection over a smaller length.

At the same time it may be noted that the statements show that a very material increase, namely of 43½ miles, has been made to the length of avenues; possibly, however, this includes repairs, the failures which necessitated these not being shown,

35. The report for the *Ambála District* is rather meagre, but it appears that 65¼ miles were added to the avenues of the district bringing up the total to 324 miles out of 383 miles suitable for planting up. This is satisfactory as in the last triennial period no progress at all was made.

36. There has been a net increase of 30½ miles in the avenues of the *Sialkot District* and Municipality during the period under report which is very favourable compared with only 11·5 in the previous three years. The Deputy Commissioner's method of planting up very broad roads is worthy of note and might be adopted elsewhere; it is certainly one way out of the difficulty of shade falling on the zamíndárs' fields. The success attending the planting up of the protection bunds and canal banks is gratifying. But it is unfortunate to find no better results with kikar sowings than in the Delhi District. A change has been made in supervising the work, the Tahsíldárs being in charge of roadside planting in their own tahsíls instead of the District Engineer, who was responsible for the whole district in these operations. This is said to work better.

37. In accordance with a three years' plan of operations 23 miles of avenues were added, in the *Hoshiárpur District*, more progress was not made owing to the establishment being engaged to a great extent in maintaining existing avenues. A great deal of work appears to have been done in extracting ill-formed trees of various species and replacing them by shisham and mango. The statement shows that there are only six miles unplanted out of 440 miles suitable for avenues.

38. No report has been received from the Deputy Commissioner of *Simla*. He remarks that arboricultural operations practically do not exist in the district, and that those carried on by the Municipality and Cantonment authorities are not under his charge. A note on the subject by the Superintendent of Annandale Gardens has, however, been received which will be found printed together with other District reports.

39. The report from *Hazára District* gives no information regarding amount of work done. It appears to have been principally repairs. The statements for the previous period showed that no increase whatever had been made during 1887-88 to 1889-90. This state of affairs is still continuing. The Deputy Commissioner offers two explanations, firstly, that planting is very difficult on some of the hilly roads, and secondly that the District Board is too poor to allot much money for arboriculture.

40. In *Kángra District* 88 miles of road were planted up, of which nearly 40 failed, a fairly considerable percentage regarding which no remarks are offered in the report. The cause is presumably the common one, *viz.*, want of water. The five years' plan of operations has not been fully acted up to, the establishment being mostly occupied with looking after existing plants.

II.—Groves and Plantations.

41. About 2½ acres were added to the area under groves in *Muzaffargarh*. It is stated that there are no plantations in the district, but the report further on gives a list of new plantations aggregating 6¾ acres, which have been made along certain roads. There is no reference to the date-palm experiments which were stated in the last report to have been not very successful.

42. Three groves were sold in the *Multan District* and by correction of errors the area was reduced from 47 acres to 21·38 acres. No reasons are adduced for the sale of the groves above noted.

43. The Chabri plantation in *Dera Gházi Khan District* has been found to be a failure on account of want of water and is to be made over for cultivation.

44. The Deputy Commissioner, *Dera Ismail Khan*, gives some interesting information regarding groves at present existing in the district; these are acknowledged to be of great convenience to travellers.

45. In *Jhang District* the Sahjawal plantation is evidently a paying concern.

50 acres were added to plantations in *Bannu* and a considerable increase, from 551 acres to 984, occurred to groves in *Shahpur*. The attempts to afforest the Sakesar hill still go on and, though the difficulties are considerable, the result

is stated to be so far satisfactory and the heavy rains of 1892-93 were favourable to the experiment. The sanitarium is stated to have been much improved thereby.

46. 106 acres of plantations were attempted in *Hissár*, but 54 out of these or just over one-half failed for want of water. 4 new groves were made on about 30 acres and the area was also added to by transfer of 18 acres from nurseries. Plantations in the *Ferozepore District* continue to increase both on Government lands and those of the Mamdot estate in the Court of Wards 40 acres being added during the period under report.

47. 30 acres taken up for plantations in *Rohtak* have been sown with kikar which, it is satisfactory to learn, are coming on well.

Two groves in *Karnál District* aggregating 5·33 acres were planted up with fruit and shisham trees. More than half the trees in existing groves are beyond the need of protection. About half an acre was added to groves in *Gurgáon* by transfers from nurseries. The substantial addition of 102 acres was made to the area of plantations and afforestations of the hills. There seem to be difficulties in the way of apathetic headmen of villages and cattle straying in, but it is hoped that the planting up of these hills may succeed.

48. In the *Delhi District* the area shown under groves has increased by 3·94 acres, this addition, however, has been due to transfers from nurseries and correction of errors. The Bela plantation (938 acres), which had been stocked for some years, was only shown for the first time in 1891-92. There has consequently been a considerable increase in the area under plantations. The sowing of the bunds with kikar is interesting.

49. 2·50 acres of groves were sold in the *Jalandhar District* though it is not stated for what reason. The area under plantations increased by 4½ acres, but the actual work done amounts to 32·75, the compensating decrease being due to plantations washed away by the river. The *Ludhiána* rakh appears to be the most important plantation in the district of that name. Ornamental shrubs have been transplanted into it from the Station garden.

50. In the plantation in the Government garden at *Gurdáspur* the shishams are being replaced by mangoes. The Deputy Commissioner does not consider the mulberry, which was introduced into the district in connection with sericulture, to be of any use if that trade be abandoned.

The report for *Ambala* shows that the area of groves was increased from 5·50 acres to 112·90 acres. In 1890-91 92·90 acres were planted up, but no further explantation is given of this sudden increase. In *Siálkot* and *Hoshiárpur* the groves are reported to be flourishing. Efforts made to stock up the Civil rakh near Abbottabad in *Hazára* have been as yet very unsuccessful, a large percentage of the very small area attempted having failed.

III.—Nurseries.

51. One new nursery was formed in 1892-93 in *Muzaffargarh*, all others having been previously transferred to groves. Nine nurseries already existed in *Multan* at the beginning of the period and 12 new ones in various parts of the district have been added. It is hoped this increase points to more extended planting of roadsides being undertaken in the future. No details are given regarding the rather large nursery of Kukar Hattá.

52. Five new nurseries have been established in *Dera Gházi Khan* which have proved useful in providing plants for the roadside avenues. They also contain a great variety of young fruit and other trees and shrubs which are distributed *gratis*. Slight additions were made in *Dera Ismail Khan* and *Bannu*. *Montgomery* obtains plants without establishing regular nurseries. There is a considerable area under nurseries in *Shahpur* and this has been added to.

53. 283·92 acres were added to and 23·33 excluded from nurseries in *Hissár*, the exclusions chiefly on account of transfers to groves and correction of errors. The large increase took place almost entirely in Hánsi Bír; this area can however hardly be necessary to provide young trees for transplantation.

54. 3 acres were added in *Peshâwar* and 4 acres transferred to groves. In *Kohât* trees are readily obtained from private gardens. The same is the case in *Jhelum*. In *Karnâl* existing nurseries are sufficient for the wants of the district. There is only a small area in the *Gujránwála* tahsíl of the district of that name, but on the Chenáb colonisation area about 200 acres of nurseries have been taken up; so presumably arboricultural operations are going to be undertaken on a large scale.

55. Small additions were made to nurseries in *Gurgáon* and about half an acre was transferred to groves. 4,540 plants, chiefly shisham with a few mango and jáman, were distributed to the villagers in the *Amritsar District*. There are 4 nurseries in the *Delhi District*, all of which are reported to be flourishing, that at the Kutab contains 60 date palms. Nurseries in *Jalandhar* were increased by 0·56 acres. Those now existing are stated to be sufficient for the requirements of the district; 10,920 trees were distributed to zamíndárs and others partly free and partly at a nominal price.

56. 1·10 acres were added to the nurseries of the *Ludhiána District*, and fruit trees and saplings were distributed to villagers *gratis*. During the three years 23·90 acres of nurseries were established in *Ambala*, the district having commenced the period with none. Additions to the area of nurseries in *Siálkot* by planting and decreases by transfers to groves have resulted in a net decrease of 10·19 acres. Zamíndárs are allowed to buy fruit trees at half price from the District gardens in the Cantonment.

57. The excessive snowfall of 1892-93 has apparently done no damage to the nurseries of *Hazára*. 1,000 young trees were distributed to zamíndárs and several hundred fruit and other trees supplied for gardens in Abbottabad.

1·50 acres were added and 2·73 acres excluded in *Kángra District*, while Municipality of Dharmsála acquired a plot of 2 acres for a new nursery.

IV.—Government Gardens.

58. No information whatever is given regarding the condition of Government gardens in *Muzaffargarh*, *Multan*, and *Dera Gházi Khan*, though such were mentioned in the last report. In 1891-92 dates were distributed for sowing in *Jhang*, but the experiment was not successful; attempts made to grow imported vines also failed.

59. There appear to be a large number of gardens in the *Shahpur District*. Considerable attention has been paid to fruit culture, and annually some 500—600 fruit trees are obtained from the Government gardens in Lahore and planted out. Dates from Egypt, Tunis, &c., appear to be successful. Planting up of avenues having now nearly finished, the chief energies of the establishment are to be devoted to the improvement of the fruit groving.

60. The Arabian dates in *Ferozépore*, now about seven years old, are beginning to yield fruit. Some land was given up from the Shahi Bágh in *Peshâwar* to make a road. No reference to the fruit growing of this district is made in the report for the present period such as was found on the last occasion.

61. The date palms in *Kohât*, which were in a thriving condition at one time, do not appear to have been so successful afterwards. The locusts which did an immense amount of damage are to be considered the cause. In *Rohtak* the dates seem to have done better and some Multan dates have been sown broadcast with the intention of transplanting them.

62. The *Lahore* Municipality has given no information under this head. Dates in *Karnâl* have been unfortunate. Most of them died and the few that survived and were establishing themselves were uprooted by pigs.

63. There are several gardens in *Gujránwála* chiefly famous for Maltese oranges. Endeavours are being made to render some of these gardens self-supporting; at present they are far from it. 811 mangoes were planted along

roadsides, but were unfortunately destroyed by locusts. The date palms of 1889-90 are doing well. This species appears to have been most successful in *Gurgáon* and many trees have been distributed to zamíndárs.

64. Two new parks in addition to the Rámbágh were made in *Amritsar* on land reclaimed from the city ditch.

It is reported from *Delhi* that the Roshnára garden has been much improved by cutting down old trees and opening out new roads. Presumably the Queen's and Kodsia gardens are flourishing. 500 mangoes were planted along district roads with partial success. The dates distributed to villagers and others do not seem to have done well; it is alleged that their failure is due to want of care.

65. There are five public gardens in *Jalandhar* supported by the District and Municipal Boards. These are with one exception not self-supporting; two of them, however, are very young and the Empress garden is, the Deputy Commissioner remarks, a public resort and kept up more as an ornament than as a source of income. The date palms have only been fairly successful, half the number having died and the climate of the district is reported not to be suited to their growth.

66. Young trees are distributed to zamíndárs from the six gardens in *Ráwalpindi*.

Great efforts are being made in the spread of mango planting in *Gurdáspur* and much interest has been shown in the work. The income actually derived from the sales indicates that a considerable profit might be made out of these trees. The Station and Morni gardens in *Ambala* have been improved and are now flourishing.

67. Experiment with *Albizzia procera* and *Robinia* in *Siálkot* have shown that the latter requires much attention. The dates have been most successful, and the Deputy Commissioner considers that they could be grown in any part of the district.

A considerable amount of work has been done in *Hoshiárpur* in fruit growing and various kinds are obtained from Lahore. It is satisfactory to note that for most of the sorts there is a great demand, particularly mangoes and oranges; the date palms are fairly successful.

68. Fruit trees in *Hazára* suffered much from the heavy snow and locusts but considerable interest is displayed in the matter by private persons, especially in the lower parts of the district. The *Kángra* report furnishes some interesting information regarding the development of fruit culture. A large variety of fruit trees appear to have been tried and distributed to different people.

(*c*).—Cattle-trespass and Lopping.

69. Most districts give no information on the subject of cattle trespass, which, as stated in the last report, constitutes one of the chief difficulties of raising plants in the first instance.

In *Delhi* it is noted that, besides cattle and goats, porcupines do much damage to the young trees.

70. In *Gurdáspur* some attention has been paid to the best kind of fencing, which seems to be a cactus hedge; it however requires attention or it will grow too vigorously and kill the young trees it was intended to protect.

In a few districts it is noted that trespassing cattle are taken to the pound.

71. In *Jalandhar* it is to be regretted that notwithstanding impounding of cattle and prosecution of the owners, damage still continues to be done.

72. The matter is one that requires to be taken in hand vigorously, as it is beyond a doubt that many of the failures are to some extent to be attributed to browsing of goats and camels. In such a dry climate as the Punjab every opportunity should be given to a plant to establish itself, and a tree which has been browsed is of course much less able to combat the drought than one which has not been so damaged.

73. Lopping is carried on to some extent and constitutes a source of considerable income in some districts. Few of the reports give any information on the subject, so it cannot be said whether this operation is carried on, as it should be, under proper supervision.

(*d*).—Fodder Trees.

74. Very little attention seems still to be paid to this heading, hardly any district report containing any remarks on the subject.

In the *Delhi District* it is reported that fodder trees have been planted along roadsides, and that the sowing of kikar in various places has been taken in hand. It is not quite evident what is being done in *Hissár*, but apparently some attention has been paid to the subject.

The *Hazára* report states that the leaves of wild trees are used as fodder; in this connection the remarks under the similar section in the last Provincial report may be noted.

(*e*).—Financial.

75. The following statement shows the income and expenditure of the period under report together with the figures for the two preceding triennial periods :—

1	2	3	4	5
Year.	Income.	Expenditure.	Surplus.	Deficit.
	Rs.	Rs.	Rs.	Rs.
1884-85. to 1886-87	1,92,874	4,36,519	...	2,43,645
1887-88 to 1889-90	3,64,145	7,05,868	...	3,41,723
1890-91	1,81,666	2,55,821	...	74,155
1891-92	1,68,399	2,80,307	...	1,11,908
1892-93	1,75,255	2,93,446	...	1,18,191
Total 1890-91 to 1892-93 ...	5,25,320	8,29,574	...	3,04,254

An examination of these figures will show that the revenue from arboriculture has been steadly rising during each triennial period, and while the same must be said of the expenditure, still the rise in the present period as compared with the previous three years shows a slight falling off in the rate of increase, the result being that the deficit is nearly Rs. 40,000 less than that in the period 1887-88 to 1889-90.

Arboriculture, however, is not intended, at least primarily, to be a financially successful undertaking and increased expenditure may be noted with satisfaction as it indicates a larger amount of work done. The increase in revenue during the three years has remained fairly constant, that of the first year being actually the highest; while the gradually increasing expenditure has been mainly under the head of ornamental gardens.

C.—DEVELOPMENT OF ARBORICULTURE BY PRIVATE PERSONS.

76. The distribution of young fruit and other kinds of useful trees, which now takes place in most of the districts, has no doubt done much to increase the interest of the people in tree culture. In many reports it is stated that there is a great demand.

In *Shahpur* considerable attention has been paid to the subject. Plants and grafts are distributed free and sometimes a gardener is lent to lay out gardens. Improvements have also occurred in the Kálra estate by thinnings of dense jungle and reproduction of better qualities of fruit.

A great many fruit gardens exist round about *Kohát*, and, though much damaged by locusts in 1891-92, are still reported to be flourishing.

77. The Deputy Commissioners of *Lahore*, *Rohtak* and *Delhi* give lists of persons who have planted trees at their own expense. The plots of kikar mentioned in the last report for the *Delhi District* are stated to be flourishing, but it is a pity they could not have been added to.

78. The people of *Jalandhar* do not appear to take kindly to planting and are cutting the trees down. The Deputy Commissioner instances a case of a fine grove of shisham being felled to bring the land under cultivation. It is not often that the people dislike trees when once planted; they are generally apathetic and disinclined to undertake the trouble and initial expense of raising a crop.

There are some very valuable mango groves in *Gurdáspur* and the report states that there is a mild inclination to private arboriculture in that district.

D.—CANAL ARBORICULTURE.

79. The annexed statement shows the progress made in planting up canal avenues during the three years under report as compared with that in the preceding triennial period:—

1	2	3	4	5	6
Year.	Length of roads and canals suitable for avenues.	Length of roads and canals			
		Fully stocked with trees at the beginning of the year or period.	Planted during the year or period.	Which failed during the year or period.	Fully stocked with trees and plants at the end of the year or period.
	Miles.	Miles.	Miles.	Miles.	Miles.
1887-88 to 1889-90 ...	5,150·29	2,676·18	577·69	318·66	2,935·21
1890-91 ...	5,755·30	2,935·21	325·89	126·55	3,134·55
1891-92 ...	5,313·61	3,134·55	214·29	143·84	3,205·00
1892-93 ...	4,467·68	3,205·00	361·59	962·34	2,604·25
1890-91 to 1892-93 ...	4,467·68	2,935·21	901·77	1,232·73	2,604·25

This shows a net decrease of 330·96 miles (difference of columns 4 and 5). The large amount shown under failures (column 5) in 1892-93, principally consists of correction of errors in previous returns and transfer of 252·20 miles to plantations in the *Delhi Division* of the *Western Jumna Canal*. After eliminating the entries due to correction of errors, it appears that the work done actually increased the avenues by 299·92 miles. The total length however planted up is rather less than it was six years ago (difference of columns 3 and 6).

80. The following statement shows the position with regard to groves:—

1	2	3	4	5
Year.	Area of Groves			
	At the beginning of the year or period.	Planted or transferred from nurseries during the year or period.	Which failed during the year or period.	Stocked with trees or plants at the end of the year or period.
	Acres.	Acres.	Acres.	Acres.
1887-88 to 1889-90	3,383·67	2,053·82	2,473·69	2,963·80
1890-91	2963·80	145·81	1,035·25	2,074·36
1891-92	2074·36	...	2,074·36	...
1892-93	...	...	...	...
1890-91 to 1892-93	2,963·80	145·81	3,109·61	...

In all Canal Divisions the class of groves has been abolished, areas previously shown as such having been transferred to plantations.

1	2	3	4	5	6
Year.	Area taken up for plantation at the beginning of the year or period.	Area of Plantations. Successfully stocked at the beginning of the year or period.	Sown or planted during the year or period.	Which failed during the year or period.	Stocked at the end of the year or period.
	Acres.	Acres.	Acres.	Acres.	Acres.
1887-88 to 1889-90	15,475·23	4,304·47	9,864·99	3,226·65	10,942·81
1890-91 ...	17,290·29	10,942·81	2,856·15	1,683·51	12,115·45
1891-92 ...	20,991·60	12,115·45	2,959·59	329·12	14,745·92
1892-93 ...	24,852·87	14,745·92	2,644·24	905.77	16,484·39
1890-91 to 1892-93	24,852·87	10,942·81	8,459·98	2,918·40	16,484·39

81. The above statement exhibits the progress in plantation works during the three years and compares it with that of the previous period. It will be observed that the statement shows a net increase of 5,541·58 acres (difference of columns 4 and 5), but as was noted in the preceding paragraph all the areas previously shown as groves have now been classed as plantations. By deducting the amounts transferred from other heads, principally groves, as well as corrections of previous errors, it appears that the real work of three years has resulted in a net increase of 598·07 acres. The bulk of the existing plantations is on the *Sirhind Canal*.

1	2	3	4	5
Year.	Area of Nurseries. At the beginning of the year or period.	Added during the year or period.	Given up or transferred to groves during the year or period.	Remaining at the end of the year or period.
	Acres.	Acres.	Acres.	Acres.
1887-88 to 1889-90 ...	73·55	101·29	126·63	48·21
1890-91 ...	48·21	33·15	28·40	52·96
1891-92 ...	52·96	33·92	19·95	66·93
1892-93 ...	66·93	38·51	38·86	66·58
1890-91 to 1892-93 ...	48·21	105·58	87·21	66·58

82. From the above table it will be seen that the nurseries in the Canal Divisions have increased by 18·37 acres (difference of columns 3 and 4),

the additions being made in the first two years of the period.

1 Year.	2 Income.	3 Expenditure.	4 Surplus.
Total 1884-85 to 1886-87 ...	Rs. 2,15,459	Rs. 1,55,415	Rs. 60,044
1887-83 to 1889-90	2,60,242	2,17,337	42,905
1890-91	1,08,160	82,649	25,511
1891-92	1,06,442	85,959	20,483
1892-93	1,00,765	85,900	14,865
1890-91 to 1892-93	3,15,367	2,54,508	60,859

83. The above statement shows the financial results of the arboricultural operations of the triennial period under report as compared with those of the two previous periods. It will be seen that the income and expenditure have increased as nearly as possible at the same rate; the surplus of the present period has just exceeded that of the first period, having recovered from the fall experienced in the second period. It may also be pointed out that the results of the three years ending 1892-93 show that the income has been diminishing yearly, while the expenditure has increased and the surplus has fallen by more that Rs. 10,000. The decrease in the revenue above noted is due to more restricted sales from groves, avenues and plantations in the *1st and 2nd Divisions* of the *Bári Doáb Canal.*

E.—ARBORICULTURE ON PROVINCIAL ROADS.

84. From the statement below it will appear that the avenues on the Provincial roads were diminished by 36·19 miles (difference between columns 4 and 5). This result is due mainly to correction of errors in previous returns notably in the *Peshâwar Division.* The work done during the three years really increased the length of avenues by 148·17 miles, the chief additions being in *Peshâwar*, *Rawalpindi* and *Jalandhar.*

The following statement shows the position of affairs :—

1 Year.	2 Length of roads suitable for avenues.	3 Length of Roads: Fully stocked with trees at the beginning of the year or period.	4 Length of Roads: Planted during the year or period.	5 Length of Roads: Which failed during the year or period.	6 Length of Roads: Fully stocked with trees or plants alive at the end of the year or period.
	Miles.	*Miles.*	*Miles.*	*Miles.*	*Miles.*
1887-1888 to 1889-90 ...	1917 54	709·09	451·67	233·89	926·87
1890-91 ...	1875·86	926·87	131·43	56·98	1001·32
1891-92 ...	1780·04	1001·32	144·12	277·47	867·97
1892-93 ...	1807·62	867·97	87·07	64·44	890·60
1890-91 to 1892-93 ...	1807·62	926·87	362·62	398·89	890·60

85. The area of groves as shown by the statements appears to have undergone the large increase of 494·64 acres, but this is chiefly due to a considerable area being transferred to the Public Works Department from the Police Department in the *Julandhar Division*. The work actually done in extending the area of groves amounted to only 17·49 acres.

There is only one plantation belonging to the Provincial Works. This is situated in *Dera Ismail Khan*, and underwent a slight increase; all other areas of this nature are classed as groves.

86. Nurseries showed a net increase of 5·54 acres; the additions were chiefly in *Gujránwála* and *Jalandhar*, while a considerable decrease occurred in *Kohát*.

87. The following shows in tabular form the income and expenditure on arboriculture during the three years under report as well as the figures for the previous triennial period :—

1	2	3	4
Year.	Revenue.	Expenditure.	Deficit.
	Rs.	Rs.	Rs.
Total 1887-88 to 1889-90 ...	68,388	90,451	22,063
1890-91	26,120	44,359	18,239
1891-92	26,437	47,433	20,996
1892-93	28,580	46,607	18,027
Total 1890-91 to 1892-93 ...	81,137	1,38,399	57,262

These figures show that, while there has been a comparatively small increase in the revenue (column 2) of the three years as compared with the preceding triennial period, the expenditure (column 3) has been largely augmented, the difference being nearly entirely under the head of maintenance of existing groves and avenues.

88. As in the previous reports my thanks are due to my Personal Assistant, on whom the brunt of the whole work of compiling this report falls.

I have the honour to be,

Sir,

Your most obedient Servant,

R. H. C. WHITTALL,

Conservator of Forests, Punjab.

DISTRICT ARBORICULTURE.

MUZAFFARGARH DISTRICT.

Rainfall.—There has been abundant rain during the last three years, especially during 1892-93. The District was overflooded in 1892-93, and the roadside trees were damaged to a great extent.

Nurseries.—As shown in last year's statements all the existing nurseries in the District were either used up or transferred to "groves."

In order to take up work on the Alipur and Sitpur road a new nursery was laid out near village Pakka Nayach during 1892-23. It is hoped that trees from this nursery will be transplanted on other roads too.

Plantations.—There are no plantations in the District here, nor were any new ones taken in hand during the three last years in order to raise a timber crop or afforestation.

Groves.—The total area planted with "groves" during the last three years was 2·672 acres. This area belonged all to the District Courts compound and was planted with fruit trees only.

Avenues.—The total length of roads fully stocked with trees or plants and alive at the end of 1892-93 was 107·267 miles as compared with 100·802 miles, the length stocked up at the end of 1889-90, thus showing a progress of 6·465 miles during the three last years.

New plantations were taken in hand on the following roads:—

	Miles.
Khangarh to Dholanwála ferry	·625
Rukkanwáh to Shahrsultán	·500
Shahrsultán to Sitpur	1·250
Mahmudkot to Ahsanpur	1·500
Sanáwan to Kureshi	1·000
Muzaffargarh to Aludéwáli	1·852

The decrease in the progress during the last three years as compared with the previous three years is accounted for by the fact that besides the progress noted above 5,000 trees were planted in gaps. These 5,000 could nowhere be shown in the statement.

Income.—The total income from arboriculture during the last three years was Rs. 2,907 as compared with Rs. 3,098, the income during the preceding three years. The small decrease requires no explanation.

Expenditure.—The total expenditure on arboriculture during the last three years was Rs. 24,951 as compared with Rs. 26,108, the expenditure during the preceding three years, thus showing a decrease of Rs. 1,157. No special reason can be assigned for this decrease.

Cultivation of fruit trees.—Owing to locusts that visited the District in 1891-92 and the floods of 1892-93 attention was not drawn towards planting fruit trees during the last three years. The matter will be kept in view in future. Rules for the distribution of fruit trees among the villagers were not adopted during the last three years; no such trees were forthcoming for distribution as most of the plants were destroyed by the floods.

MULTAN DISTRICT.

Rainfall.—The rainfall last year was much above the average as shown in the statement, and has proved very beneficial to the young trees that were planted.

Nurseries.—In the beginning of the year 1890-91 there were 9 nurseries in the District as follows:—

		A.	R.	P.
1.	Amkhas garden at Multan	0	0	6
2.	Langeh Khan garden at Multan	0	0	5
3.	Makhdúm Rashíd	0	0	39
4.	Serai Sidhu garden	0	0	6
5.	Lodhrán garden	0	0	4
6.	Jalálpur	0	0	1
7.	Kahror	0	0	3
8.	Mailsi	0	1	12
9.	Kukar Hatta	40	0	0
	Total	40	2	36

12 more nurseries were established during the past three years as follow :—

		A.	R.	P.
1.	Qádirpur Rán on Multan-Lahore road	0	0	4
2.	Shaikhwála well on Multan Bander Ghât road	0	0	2
3.	Sikander Khanwála garden on Multan-Surij Kund road ...	0	0	2
4.	Dhorewála well on Shujabad and Jalálpur road	0	0	20
5.	Dhaudhwála well on ditto	0	0	20
6.	Sardárwála well on Mailsi and Tibba road	0	0	25
7.	Ochishahwála on Multn-Lahore road	0	0	5
8.	Kumbharanwála well on Multan-Lahore road	0	0	5
9.	Seth Khuda Bakshwála well on Multan-Lahore road ...	0	0	1
10.	Bághwála well on Multan Bander Ghat road	0	0	20
11.	Well near Police Station at Kahror	0	0	1
12.	Well called Jumen Khanwála on Mailsi and Kahror road...	0	0	20
	Total	0	3	5

An area of 6 acres 3 roods 33 poles has been added to the 9 nurseries mentioned above. The following shows the area under nurseries as existing at present :—

	A.	R.	P.
Area shown in the beginning of the year 1890-91	40	2	36
Improvement made in the dimension of old nurseries ...	6	3	33
Area of new nurseries established during three years ...	0	3	5
Total	48	1	34

Deduct as follows :—

Transplanted and died	3	1	5
Existing area on 31st March 1893 as entered in the return...	45	0	29

Two nurseries, *viz.*, one at Kukar Hatta and the other at Makhdúm Rashíd, are irrigated by canal water only, all the rest are watered by canals and wells.

The outlay incurred on maintenance of nurseries during the last three years amounted to the following :—

	1890-91.	1891-92.	1892-93.
	Rs.	Rs.	Rs.
Pay of establishment	405	406	442
Clearance of water-course in nursery at Kukar Hatta		26	198
Purchase of land for nursery at Ludan		11	...
Purchase of bullocks		213	...
Government revenue of nursery at Kukar Hatta ...	25	47	31
Feeding of bullocks	125	108	12
Miscellaneous	76	40	22

Groves.—In 1889-90 nine groves measuring forty-seven acres were reported, of this three groves being Government property were sold during 1890-91, one was excluded from the list of groves, as no trees existed there ; the remaining five measuring 21·38 acres as detailed below have been shown in the return :—

		A.	R.	P.
1.	Grove near Basti Chamrang in the suburbs of Multan city ...	0	3	9
2.	Do. at General Vancortlandt's bungalow close to Hazúri Bágh	2	3	8
3.	Do. at Bastiwála well in Taraf Juma Khálsa	14	0	35
4.	Do. at Basti Malúk	0	0	19
5.	Do. at Aliwála	3	1	26
	Total	21	1	17

Description of avenues.—Young trees have been planted on 25 miles in lines on each side. Of this 13 miles represent new work and the remaining 12 miles are those on which gaps were filled in. The establishment employed by the District Board on planting and protecting trees is as follows :—

		Rs.	
1 Jamadár máli	@ Rs. 11 per mensem	132	a year.
23 Málís	@ „ 6 each per mensem = Rs. 138 ...	1,656	„
5 Bhishtis	@ „ 6 „ „ „ = „ 30 ...	360	„
	Total	2,148	

and that engaged by the Municipal Committees of Multan and Jalálpur cost Rs. 965 a year. Miscellaneous charges incurred during the past three years were as follows:—

	1890-91.	1891-92.	1892-93.
	Rs.	Rs.	Rs.
Cost of water taken from private wells for watering trees on several roads in Tahsíl Multan	128	188	300
Purchase of bullocks engaged on private wells for watering trees in Tahsíl Kabírwála	...	...	60
Making new earthen enclosures for protecting young trees from cattle	...	30	160
Purchase of plants	25	15	251
Cost of digging drains for watering trees in tahsils Kabírwála and Multan	2	675	493
Other petty charges	59	5	68
Total	214	913	1,332

This table shows that great improvement has been made in Tahsils Multan and Kabírwála where the trees are watered by the Sidhnai Canal.

General remarks.—The general result of arboricultural operations for the past three years cannot be said to be very satisfactory, but the great difficulties attending the growth of young trees in this District must be taken fully into consideration. They can only be planted where water is available, and there is matter for congratulation in the fact that out of 1,231 miles of reads in the District, 213 are planted with trees, being nearly one-sixth of the total length. Plantations on Canals and Rájbahás under the Canal Department are not included in the returns, which comprise groves and avenues under the District Board and Municipalities only.

There is room for improvement by means of individual effort, and the subject was introduced at the last meeting of the District Board. A number of influential members promised to plant trees on the lengths of roads near their own villages, though whether their promises can be depended upon remains a matter of doubt. The subject however will receive careful attention during the current year.

DERA GHAZI KHAN DISTRICT.

Rainfall.—The average fall of rain during the period under report has been 5·77. Of course this district is well known for a general want of rain, and the result is that arboriculture in a great measure suffers thereby.

Nurseries.—Five new nurseries were established in 1890-91 for the convenience of a more ready means of supplying young trees not only for filling in gaps but also for the extension of roadside avenues. These are kept up and have been found very useful. The trees found to be best suited to the soil of this District are the Dalbergia Sissoo, Melia Indica Tamarindus Indica, Terminalia Arjuna, Albizzia Lebbek, Gmelina arborea, Cordia Myxa, Phœnix dactylifera, Cassia Fistula, Jamun and Acacias. All these as also mangoes, tun, Eucalyptus and several other descriptions of seeds are set, which are annually distributed to land and garden owners gratis. For trees there always is a great demand, the number and description of young trees distributed are given below :—

	1890-91.	1891-92.	1892-93.
Citrus Limetta	20	...	100
Prunus persica	10	...	100
Citrus acida et Medica	7	10	...
Mangifera indica	65	158	225
Melia indica	10	10	...
Albizzia Lebbek	20	20	40
Cassia Fistula	15	5	...
Ficus Carica	12	4	98
Bugainvillia	10	4	4
Pumelo – Shaddock	10	...	...
Grapes	20	64	30
Oranges—Citrus Aurantium	2	2	50
Phœnix dactylifera (imported)	...	8	224
Morus alba	...	15	50
Punica Granatum	...	217	436
Eugenia Jambolana	...	12	30
Bauhinia Variegata	....	15	49
Cedrela Toona	...	10	10
Moringa Pterygosperma (Perennial Bearing-Deccan) ...	2	...	9

and a large variety of roses and other flowering plants propagated by slips, cuttings and grafts.

Plantations.—In 1891-92 the area of land was corrected and shown at 1,677 acres, of which 60 acres are under afforestation, and the same area remains set. Orders have been issued to plant out more of the land at convenient opportunities and seasons, it is therefore hoped that in time a fair share of the land will be afforested.

The Chhabri plantation after years of experience was found not to be doing well for the want of a regular supply of water, and is therefore being brought under cultivation by parties who are sinking wells on plots made over to them, but that at Khánwah might develop in time into a good Rakh.

Groves.—The Sharif Shah Horse Fair ground is the only grove in existence under charge of Deputy Commissioner, and as no other favorable site is to be found in the proximity of head-quarters it is not possible to establish others. The one in existence is advancing in growth and is much appreciated for its design and the shade it affords.

Avenues.—The length of roads suited for avenue planting is given at 114 miles, of which 24·75 miles were under trees during 1890-91 and 1891-92, and in 1892-93 an extension of two miles was further affected, making up a total length of 26·75 miles. As the roadside nurseries become better established, it will be found more convenient and easy to make further extensions in the setting of trees along roads; hitherto the greatest drawback to this has been the difficulty in the transport of young trees from the Sadar nurseries.

Income.—The income during the past three years has averaged Rs. 1,036 per annum. The largest amount being realized during 1891-92. Of course this item is very variable owing to many circumstances, as for instance, failure in produce; it is however satisfactory to find that the income is increasing, and there is every hope of its increasing annually as the land, the bulk of which is newly reclaimed, improves.

Expenditure.—The average under this head for the past three years has been Rs. 7,065, and it is anticipated that though the extension of afforestation, as well of roadside avenues is contemplated, still this expenditure will not increase.

DERA ISMAIL KHAN DISTRICT.

Rainfall.—The rainfall during the years under report was as follows:—

1890-91	12·49
1891-92	4·82
1892-93	15·97

It will be observed that the average fall for the three years under report considered as a whole was unusually good, while that for 1892-93 taken separately was exceptionally high. Water in the wells has remained at a reasonable level and all tanks and lowlying lands were fairly full and moist.

Nurseries.—In 1890-91 there were 7·8125 acres of nurseries to which 0·6687 in 1891-92 and 2·0 acres in 1892-93 were added, thus making a total of 10·4812 acres at the close of 1892-93.

As most of the old nurseries were located on the Tank road, it was found necessary to form new ones on the western border of the Kuláchi Tahsíl to encourage the plantation of trees in that part of the district, a work which was facilitated by the plentiful supply of perennial water in this tract.

The seedlings asked for by the zamíndárs were supplied gratis whenever available.

The date stones obtained from the office of the Director of Land Records were sown in selected localities in the Cis-Indus Tahsíls and especially in the Thal tract, with good results.

A number of fruit trees of various kinds were also sent for from Saháranpore as an experiment and for the improvement of the gardens.

Plantations.—There are no plantations in this district.

The soil of the tract where perennial water is available is not suitable for plantations as it is too stony and hard for the purpose. The most suitable locality for plantations lies Cis-Indus between the Kachís and high Thal, but here there is scarcity of water and consequently the planting of trees in that part of the country cannot be carried on except at a prohibitive cost.

Groves.—In 1890-91 there were 16 acres of groves, of which 0·50 acres perished during 1891-92, while in the year 1891-92 two acres were planted, making a total of 17·50 acres at the close of 1892-93.

There are 12 groves on the Dera Ismail Khan-Tank road, the remainder being situated Cis-Indus on the Kalur Kot-Leiah road, at the Railway Stations and a few on the Bhakkar and Jhang road, all of which are in good condition and are acknowledged to be a

great convenience to travellers. It would not be out of place to mention here that there are eight or nine groves of Eucalyptus in Dera itself, but these are the property partly of the Municipality, some of Government and others of private individuals. Moreover groves of khagal (*farash*) trees are scattered here and there over the wide area of dry land in the Daman and Thal tract. These are the property of the individuals. The large groves of date trees at Paniála, a village situated at the foot of the Sheikh Budín range some 30 miles from Dera Ismail Khan, seems worthy of notice. These groves produce excellent fruit, which is stated to stand next in quality to the "Kech" (in Biluchistán) and the dates of Arabia.

Avenues.—In 1890-91 the length of avenues was 28 miles only to which 15 + 19 miles were added during 1891-92 and 1892-93 respectively, while 8+10 miles perished during the said years, thus leaving a link of 44 miles under avenues at the close of the year. Of the total length of 206 miles suitable for the laying out of avenues, more than half consists of land of so hard a nature that trees could only be planted there at a prohibitive cost. Deducting this area some hundred miles are left, of which 44 miles have up to date been taken in hand. These have been carefully stocked with trees which are reported to be in a flourishing condition. Extensive operations were undertaken during the years under-review, but the trees for a wide extent were injured by the heavy floods in July and August 1892 and had to be replanted. Locusts too committed a vast amount of injury in 1891. Considering the circumstances of the District it may fairly be stated that considerable improvement has been effected during the past three years.

Trees, Municipal.—In Dera Ismail Khan and Karor the circular roads, some 3½ miles and one mile respectively in extent, are planted with a double row of trees. There are also circular roads with a single row of trees in Bhakkar and Leiah, but these are not in such a flourishing state as the trees at the former two places.

These trees are maintained by the Municipal Board.

Supervision.—The work of supervision is carried on by the Tahsíldárs in their respective Tahsíls under the Deputy Commissioner's direct control. Two of the former, Lála Bhoja Rám and Amír Khan, take a good deal of interest in the work.

Method of planting.—The planting of trees and seedlings in this district is generally commenced in the months of January and February in winter and during July and August in summer. The seedlings when transplanted are generally under 18 months old but in some cases as much as two years.

They are transplanted with their roots and laid out at a distance of from 12 to 24 feet from each other.

The roots are buried at least three feet in the ground and are protected with mud wall, "pilchi" or thorn fencing according to the nature of the locality. They are watered every alternate day where possible, otherwise every third or fourth day till they attain a reasonable height. Kikar, siras, farash and shisham are found most suitable for planting on avenues.

Income and Expenditure.

Years.	Income.	Expenditure.	Difference.
	Rs.	Rs.	Rs.
1890-91	*Nil.*	1,725	1,725
1891-92	78	4,272	4,194
1892-93	281	5,791	5,510

It will be observed from the foregoing table that the District Board spends every year a very large sum on arboriculture. The results are as satisfactory as could be expected in a district circumstanced as this is, and dependent for the most part on rain for the success of its arboricultural operations. Owing to the heavy floods and storms that prevailed during 1892-93 a certain number of trees were uprooted and their sale proceeds raised the income to Rs. 281 in 1892-93.

Fruit trees.—There are several fruit gardens at Leiah, Bhakkar and Tank in this District, but their improvement, though steady, is slow.

General.—The District of Dera Ismail Khan being almost wholly dependent upon rain for its irrigation, is not favourable to tree planting. On joining the District I turned my attention towards the improvement of arboriculture which was not in a flourishing condition and accordingly moved the District Board to allot an increased sum for the purpose.

Zealous endeavours were being made to effect an improvement when a plague of locusts occurred in 1891, and greatly retarded my efforts in this direction.

Subsequently the heavy floods in July and August 1892 seriously damaged the young trees on the roads situated in the lowlying lands.

In spite of all these drawbacks considerable improvement has been effected.

The zamindárs of this District are naturally apathetic towards tree planting on account of the trouble and expense it involves, but a great deal is being done to rouse their interest in the work.

The Thal zamíndárs were encouraged to grow small groves of khagal and date trees near their wells. Date stones were distributed to them gratis for this purpose, and it was explained that these trees were suited to a dry soil and would therefore require very little care on their part, while the advantage to be gained by planting these groves was obvious. My expectations were not I regret to say fulfilled owing to the apathy of the people, but still in some cases groves of the kind have been planted and are said to be doing well. A start in the right direction has, in fact, been made which patience and time may develop.

The trees and groves on the road leading from Dera Ismail Khan to Bannu are under the supervision of Public Works Department, who will, it is presumed, submit a separate report on the subject. A grant of Rs. 15 per mensem is paid for their maintenance from District Funds.

MONTGOMERY DISTRICT.

Rainfall.—The following table shows the rainfall of the three years under report as compared with the average calculated on the last five years :—

Year.	Actual yearly rainfall.	Average.
1890-91	9·07	7·08
1891-92	8·80	10·76
1892-93	17·37	10·76
Total	35·24	28·60
Average of three years	11·75	9·53

which is more than the normal average.

Nurseries.—No areas were specially set apart for nurseries, but small plots in gardens were kept stocked with cuttings and young plants for the purpose of replacing dead trees on roads, &c.

Plantations.—*Nil.*

Groves.—Total area of groves existing in this District at the end of the triennial period under report was 746 acres as in the last report.

No fresh areas were planted or transferred from nurseries during the three years under report.

The existing groves consist of old and large trees and require no particular care.

The trees planted are generally of the genus of *kikar, ber, shisham,* and *sharins.*

Avenues.—No avenues were planted during the three years under report. The work done during the three years under report chiefly consisted of replacing dead trees with fresh ones or protecting young trees from frost during the cold weather.

As already explained in previous reports a large portion of the roads in this District are still denuded of trees which do not take root owing to bad soil and scarcity of water along the roads.

White ants are very destructive here and do a great deal of damage to young plants.

Income.—The income derived from arboriculture during the years under report was as follows :—

	Rs.
In 1890-91	824
In 1891-92	1,467
In 1892-93	1,239
Total ...	3,530

This shows an increase of Rs. 480 against Rs. 3,050 in the triennium ending 1889-90, which has resulted from the sale-proceeds of dead trees (for which there was a great demand) and green wheat which was largely sown in the Station garden at Montgomery, and Tahsíl garden at Gugera during the three years under review.

Expenditure.—The expenditure incurred on arboriculture during the three years under report was as follows :—

Year.	Garden.	Groves and avenues.	Total.
	Rs.	Rs.	Rs.
1890-91	2,216	483	2,699
1891-92	2,836	440	3,276
1892-93	2,158	640	2,798
Total	7,210	1,563	8,773

In 1890-91, Rs. 156 were expended on the extension of the Montgomery Station garden and Rs. 2,060 on the maintenance and repairs of gardens, groves and avenues and the expenditure in 1891-92 and 1892-93 represent the cost of maintenance and repairs only of existing gardens, groves and avenues.

Supervision.—The working was generally supervised by the Deputy Commissioner, District Forest Officer and Tahsíldárs.

JHANG DISTRICT.

Rainfall.—The rainfall during the years 1890-91 and 1892-93 was considerably above the average of the past years. During the year 1891-92 it was below the average of the past years. The detail is as follows :—

Year.	*Actual.*	*Average.*
1890-91	13·84	10·93
1891-92	6·34	8·61
1892-93	19·61	8·61

It will be seen from the Statement No. I that the highest rainfall was during the first half-year of 1892-93, which proved very useful to the trees and the lowest rainfall was in the second half of the year 1891-92.

No doubt the rains of 1892-93 encouraged increase of plantation and something was done towards it, but as the funds were limited we could not do much.

Nurseries.—There are now three nurseries in the District, two at the Head-Quarters and the third a small one at Tahsíl Chíniot. During the period from 1887-88 to 1889-90 there were four nurseries, three at the Head-Quarters and one at Tahsíl Shorkot. Two nurseries, one at the Sadr Station and the other at Shorkot were discontinued, the young trees existing in them having been transplanted on avenues. Seeing to the present requirements of the District it is not necessary to form many nurseries here as trees can without difficulty be borrowed from private people whose lands are close to the rivers and where trees grow without incurring any expense. The nurseries at the Head-Quarters supply young trees for plantation on the roadsides and for filling up gaps on the roads and elsewhere. It will be observed from the figures for the year 1890-91 that plants covering an area of 0·25 acres were transplanted on the roadsides, but as no rain fell after the plants were put down most of them died and had to be replaced in the following year 1891-92. The trees in 1891-92 were mostly used in filling up gaps. In the year 1892-93 1,400 plants were transplanted on the road between Jhang and Chíniot covering an area of three miles. From this number (1,400), only 400 remained alive at the close of the year 1892-93 and the rest died or were destroyed by cattle as for want of funds there was no establishment entertained to look after them.

It is also mentioned that during the year 1891-92 date palm seeds were supplied to this District by the Director of Land Records and Agriculture, Punjab, which were distributed to the Tahsíldárs. In Tahsíl Shorkot where the private date palm trees are numerous, the Tahsíldár reports that 300 seeds germinated in the Tahsíl garden and 150 in other places, but as they grew on low land they were injured by the heavy rainfall of 1892-93. In Tahsíl Chíniot the seeds germinated only in mauza Kúrk Mohamdi, where it is reported that out of 1,800 plants shooted, 305 plants died and 1,485 survived and are in good condition. In mauza Kot Ise Shah in Tahsíl Jhang where the seeds were sown by a Lambardar a few seeds came out, but they all died.

Ten cuttings of Egyptian grapes were received from the Director of Land Records and Agriculture, Punjab. They were put down in the Station garden, butdied after some time as the cuttings were received in a dried state.

No additional amount was spent in either of the years under report on nurseries as they are looked after by the Garden establishment.

Plantations.—The only noticeable plantation in the District is that of Sahjowál situated on the left bank of the river Jhelum. The plantation of Bela Bagger has been altogether destroyed by the river and only a few *shisham* trees are now seen there, which will probably be carried away in another year by the river as it is making its encroachment on them.

The area under the Sahjowál plantation was by a misunderstanding increased by 114·71 acres during the year 1891-92. This mistake has been rectified in 1892-93. In the year 1891-92 trees belonging to the above mentioned plantation covering an area of 16·74 acres were washed away by the river.

The plantation at Sahjowál being on very fertile soil furnishes a good supply of timber which is sold for the benefit of the District Fund which pays for its maintenance. Grass and munj also grow there luxuriantly and are a source of income.

The plantation is guarded by a chaukidár who receives Rs. 5 per mensem from the District Funds.

Groves.—In the year 1890-91 pomegranate plants covering an area of ·10 acres were planted in the Station garden and in the year 1892-93 the following plants were purchased from the Government Botanical gardens at Lahore and planted in the Station garden at Jhang, over an area of ·87 acres which appears in column 4 of the Statement No. IV for that year:—

	Plants.
Malta orange	100
Orange	100
Pine apples	50
Plums (Aluchás)	50

No other improvement has been effected in the groves round the Dispensaries, School houses, Thanas, staging bungalows and saráis and wells. The trees at these places have grown sufficiently in height and either for want of extra place or for want of money, no addition could be made to the present groves. The total area under groves excluding that of Municipal Committees is 27·53 acres. The groves under charge of the Municipal Committees are in flourishing condition and comprise an area of 4·09 acres.

Avenues.—The number of trees newly planted during the year 1890-91 on the roads is as detailed below:—

	Plants.
Jhang and Chichawatni road	1,198
Jalsewála road	144
Circular road	1,450
Bhareri road	100
Jhang and Chíniot road	100
Total	2,992

The plants with which the gaps were filled up were:—

	Plants.
Jalsewála road	31
Jhang and Bhareri road	43
Jhang and Chichawatni road	243
Station roads	265
Total	582

In the year 1891-92, 1,250 trees were planted on the Circular road, but the cessation of rain caused a deal of injury to the trees. The soil which is at a distance from the river is not suited for avenues. Trees grow to some height but lose their beauty if not constantly watered, which is impossible to do without much expense, hence the trees close to the public buildings can only be looked after, and though so looked after they still are not thriving well; when there are no rains the branches of large trees even fade.

The plants replaced were:—

Jhang and Chichawatni road	548
Jhang and Bhareri road	180
Jhang and Chíniot road	100
Jalsewala road	8
Total	836

In the year 1892-93 1,400 plants were stocked on the Jhang and Chíniot road in single rows out of which 1,000 died at the close of the year and 400 survived. Their condition is good.

I note here that the road from Jhang to Chicháwatni with an avenue of 6 miles was transferred to the charge of the Executive Engineer, Multan Provincial Division, during the year 1892-93 who will submit his report with regard to the trees on that road. The area stocked with trees on the Chicháwatni road has been diminished from the total area under charge of the Deputy Commissioner by a minus entry in Statement No. V. In the year 1890-91 the Municipal Committee of Jhang-*cum*-Maghiána planted some trees on the Kharora road to fill up gaps.

Income.—The income derived from arboriculture during the period under review was :—

Year.	By Municipal Committee.	By District Board.
	Rs.	Rs.
1890-91	376	1,573
1891-92	236	1,239
1892-93	312	1,339
Total	924	4,151

The higher income during the year 1890-91 as compared with the two following years 1891-92 and 1892-93 has been partly due to the sale of wheat crop of the Station garden at a very favourable price.

The figures for the past triennial period were as below :—

	Rs.
1887-88	1,548
1888-89	1,442
1889-90	1,659

The only sources from which something is realized are the plantation of Sahjowál and the Station wells ; and much cannot be done to add to the income unless land be procured near the rivers.

Expenditure.—The expenditure on arboricultur for the period under report is as detailed below :—

Year.	By Municipal Committee.	By District Board.
	Rs.	Rs.
1890-91	2,332	5,133
1891-92	2,656	7,227
1892-93	2,224	5,520

The expenditure in the year 1887-88 was Rs. 4,856. In 1888-89 it was Rs. 5,242 and in 1889-90 Rs. 5,176. There has been a very large increase in the expenditure during the year 1891-92, which is due to the purchase of bullocks as well as fodder for them which on account of scarcity of rain was selling at a very high rate.

The expenditure on the establishment employed for the garden was :—

	Rs.
1890-91	2,682
1891-92	3,740
1892-93	3,004
Total	9,426

The plantation establishment necessitated the following expenditure :—

	Rs.
1890-91	62
1891-92	92
1892-93	211
Total	364

Rupees 8,090 were spent on roadsides as per following detail:—

	Rs.
1890-91	2,389
1891-92	3,396
1892-93	2,305

General.—Lopping of trees is done in proper time and wherever needed. Some interest is taken by the natives of the District in the culture of fruit trees in their gardens, but this object is accomplished by them where they find a very suitable soil near a river or its branch. *Kikar* trees grow spontaneously on the riverain lands and though not much valued in the bazár, are a great help to the zamíndárs for the supply of wood-work for their wells. The *shisham* tree, which is priced above all other trees, is planted close to wells or on damp lands but not to a large extent.

BANNU DISTRICT.

Nurseries.—The area under seedlings at the end of 1889-90 was ·47 acre and an area of 0·01 acre was added during the years under report, raising the total area now under nurseries to ·48 acre. In addition to the old nursery at Naurang a plot of land has been occupied alongside the Trunk road at Gandi Khan Khel and the long proposed nursery opened therein.

This will be a useful centre for operations on the road to Dera Ismail Khan. Both the nurseries have been of great use for planting the roads to Dera Ismail Khan and Laki.

Plantations.—The area under the *shisham* forest was 1,150 acres at the commencement of 1890-91. A plot of Government land measuring 50 acres near the village of Kamar Mushani having been added to the forest during 1890-91, the area was increased to 1,200 acres.

Groves.—The increase of ·18 acre in the land under groves is due to the planting of trees in the compound of Ghazni Khel Rest-house and in the camping ground at Naurang. All other groves remain as before.

Avenues.—There were 38·01 miles of Civil and 27 miles of Public Works Department roads stocked with trees in double rows at the end of the period under report, as against 38·67 and 28·34 respectively of the preceding year 1889-90. The decrease of ·67 and 1·34 miles is due to the fact that in 1891-92 hundreds of mulberry trees planted on about 5·50 miles were injured by locusts and withered. The following detail shows the number of young trees planted during the last three years and the proportion of those that have grown:—

Year.	Planted.	Dried.	Survived.
1890-91	1,898	640	1,258
1891-92	1,780	2,640	...
1892-93	1,449	140	1,309

The very unfavorable result in 1891-92 is due to the visitation of locusts. Lopping is done by daily labour under direct supervision and not by contract. The instructions given in Public Works Department Circular No. 5 of 1879, alluded to in para. 4 of Secretary to Government, Punjab, Public Works Department, Circular No. 3—1366, dated 7th March 1893, are duly acted upon since the last two years when the present qualified Jamadár was sent by the Agri-Horticultural Society, Punjab.

Establishment and supervision.—The Superintendent, Government Agri-Horticultural Society Garden, Lahore, has supplied a trained máli who has been appointed as Jamádár of mális in the district at Rs. 20 + Rs. 10 horse allowance, or Rs. 30 per mensem. There are 31 mális on the roads, of these 7 are paid by Public Works Department through Civil authorities. There are in addition two mális, one at Naurang and one at Gandi Khan Khel nurseries. The establishment remains the same, and except the Rs. 10 per mensem paid to the new Jamadár as horse allowance, the other charges are the same as before. One of the mális is paid Rs. 7 per mensem, two at Rs. 6 each, one at Rs. 5-8, and the rest Rs. 5 each.

The present trained Jamadár supervises the work of the mális. Sub-committees have been formed by all the Local Bodies to supervise the arboriculture and the working of the mális and Jamadár as well.

Income.—The income of the Public garden was nearly the same as in the last three years. The income in the *shisham* forests and Government rakhs under heads "Plantations" and "Miscellaneous" is fluctuating and calls for no remarks. The income from sale of loppings and dead trees was Rs. 920 against Rs. 2,141 in the preceding three years, the difference is due to the sale of many old and decayed trees disposed of in 1887-88. Of the Rs. 920, Rs. 285 were placed to the credit of the Public Works Department.

Expenditure.—The expenditure as compared with the previous year was large in the Public gardens, and this is due to the purchase of European seeds from England direct and of young trees from the Government Garden, Lahore. The expenditure on the maintenance and planting of trees on avenues is less than was expended during the previous three years and is due to the exercise of greater economy.

General remarks.—It has been under contemplation since long to reduce the present establishment of málís and substitute a system of payment, by results, to the zamíndárs owning the adjoining lands. The Sub-Committee appointed to supervise the work will express their opinion in time as to the best method which can be tried as an experiment. Nothing can possibly be done to secure the growth of young trees at Miánwáli, as owing to scarcity of water the hard soil prevents growth in general though great care is taken, and several trees are now seen round the Government buildings and at some distance on the roads radiating from the Katchery. The rainfall was on the average larger than in the preceding triennial period.

The trees suffered greatly from locusts. There are some avenues on the Municipal roads round about the town of Edwardesabad besides a small ornamental garden round the Committee house (Nicholson Hall). There are two málís costing an expenditure of about Rs. 144 per annum.

SHAHPUR DISTRICT.

Rainfall.—The average rainfall for the District is about 15 inches. In 1890-91 the total rainfall of the year was about average, but a larger proportion than usual fell in the cold season, and on the whole the year was favourable for arboriculture, except that an invasion of locusts in the spring of 1891 did great damage to the gardens and young trees in the Khushab tahsíl. In 1891-92 the rainfall was very much below average, and hardly any rain fell during the winter months, but although the growth of young trees was checked, comparatively few died outright, especially where irrigation was available. The rainfall of the past year 1892-93 has, on the other hand, been perhaps the heaviest within living memory, and the season therefore very favourable for arboriculture.

Nurseries.—The area under nurseries is shown as having steadily increased from 29·98 acres to 34·48. It is true that additions have been made to the nurseries, but some of the land entered as under nurseries should really be classed as groves, and I have ordered that a more careful classification be made in next year's returns.

Groves.—The area under groves has also steadily increased from 551 acres in 1890 to 984 acres in 1893. The increase has taken place all over the District, but chiefly on the road from Shahpur to Sáhiwál where canal irrigation has lately become available and the opportunity has been taken to plant with *shisham* and *kikar* the land on both sides the road which was reserved at regular settlement as the property of Government.

Avenues.—The main roads are gradually being lined with trees, the length of avenues having increased from 402 miles to 486. Many blanks have been filled up, and new lines planted out with success, but at considerable expense. The length of frequented road in the district devoid of shade is now comparatively small and is annually diminishing. The inundation canals have a line of trees along either bank.

Income.—The income and expenditure of the past five years have been as follows (the figures refer to the District Board only):—

Year.	Income.	Expenditure.	Loss.	Profit.
	Rs.	Rs.	Rs.	Rs.
1888-89	4,752	4,798	46	...
1889-90	5,432	4,470	...	962
1890-91	6,368	6,017	...	351
1891-92	10,737	8,448	...	2,289
1892-93	11,030	9,382	...	1,648

The income has thus been steadily increasing, and for the last four years the District Board's arboricultural operations have resulted in a handsome profit. The income has been

derived from (1) sale of garden produce from the 17 gardens scattered about the District, the average income from this source being about Rs. 1,500 a year; (2) sale of grass in the groves held by the District Board about Shahpur, along the roads and in other parts of the District, the income from this source was larger than usual last year owing to the drought and amounted to about Rs. 2,400; (3) sale of produce in other land under preparation for plantation; (4) sale of wood, the income from this source last year amounting to Rs. 4,400. During the last four years much timber has been cut down under a regular scheme, but no tree has been felled simply to make money nor has any land been cleared of timber. Only those trees have been felled which were not wanted for shade or were imperfectly developed, or which prevented the development of others; in short the operations have been rather thinning than clearing operations and the groves have been much improved by them.

Expenditure.—The expenditure has increased along with the income, though not quite so rapidly. Besides the standing expenditure on gardens and nurseries and supervising establishment, there is a large expenditure on tree felling, but the main increase has been on the extension of groves and avenues, advantage being taken of the large income to increase the area under trees, and thus provide for still larger income in the future. These operations, while they thus bring in a handsome profit to the District Board, are of great benefit to the District. The avenues and groves afford grateful shade to travellers, make fuel and timber cheap and form an admirable fodder reserve which is of the greatest advantage in seasons of drought like last year.

Fruit culture.—For the last seven years special attention has been directed to the cultivation of fruit trees of the best kinds available. Some 500 or 600 young trees of good kinds have been got annually from the Horticultural Gardens in Lahore and elsewhere and planted out in the different gardens. They are now beginning to bear fruit and promise to add much to the value of the gardens. Several of the gardeners have been taught to graft, and during the past year some 500 fruit trees, chiefly mango, apricot and orange were successfully grafted. Dates have been largely sown and the date-palms got through the Director of Agriculture from Egypt, Tunis, &c., have been planted and promise soon to bear fruit. The planting of gardens by private persons throughout the District has been encouraged, and I notice a very great improvement in this respect since I joined the District six years ago. Some twenty or more private gardens have been made within the last three years. Grafts and young plants are given them from the District Board nurseries (last year some 800 young fruit trees were so distributed, most of them free of cost), and sometimes a gardener is lent to lay out the garden. Fruit is already much cheaper than formerly, and will probably soon become still more abundant. Now that the main roads have been fairly well protected by shady trees, and that timber and fuel are generally cheap, the most advantageous form of arboriculture is the extension and improvement of fruit trees, so as to increase the quantity and improve the quality of the fruit produced in the district.

Court of Wards.—Separate statements are submitted showing the progress made in arboriculture on the Kalra estate under the Court of Wards. During the last three years comparatively small additions have been made to the area under trees, but great improvement has taken place in its condition. Thickets have been cleared, and blank spaces filled up and more specially the gardens and orchards have been improved by the introduction of better qualities of fruit. The timber and fruit-trees on the estate are rapidly developing into a valuable property.

Sakesar.—The arboricultural operations on the top of the Sakesar hill, valuable though they are, are hardly worthy of the name of afforestation. The staff employed there, while it efficiently protects the natural growth within a few miles of the top of the hill, has almost to protect every individual tree which has been sown or planted (some 3,000 or 4,000 in all), and to water it in the dry season with water brought from two miles below. After the unusually heavy rains of last year the trees are in a much better condition than I have ever seen them before. In the small gardens are some 300 or 400 fruit trees, chiefly pomegranate, apricot, almond, peach, pear, &c.; and along the roads and in small patches elsewhere a large number of poplars, willows, mulberries and pines. Some years ago the experiment was made of sowing the north side of the hill with *chil*, but the drought was too severe, and only about a hundred stunted trees have survived. Although these operations have cost a considerable sum, the result is so far satisfactory that it has greatly added to the amenity of the sanitarium, and must tend to ameliorate its climate.

General.—Not only have the District Board and Municipalities planted gardens, avenues and groves in all the most populous parts of the district, but private individuals also have followed their example, wherever irrigation from canals and wells has become available. Since the beginning of our rule many parts of the district, where formerly only stunted bushes were to be seen, are now fairly covered with valuable timber and fruit trees, which afford a plentiful supply of wood for fuel, agricultural implements and building purposes, and add to the reserve of fodder in times of drought. The improvement already attained is very marked and as the people generally have now fully realised the advantage of arboriculture in such a dry climate, there is reason to hope that the rate of progress hitherto shown will be maintained or even accelerated, and that the spread of trees will add greatly to the comfort of the people and improve the climate of this arid District.

HISSAR DISTRICT.

Income.—The detail of income realized during the three years under report has been given in the statement of Income No. VI. The increase of Rs. 702 in the year 1892-93 against the preceding year is due to sufficiency of rain and more sale of loppings and trees, &c.

Expenditure.—The increase of Rs. 6,439 during 1892-93 and Rs. 7,202 in 1891-92 against the preceding year 1890-91 is owing to (*a*) the construction of a new District Board garden at Hansi, (*b*) plantation of trees in the Hánsi Bir and (*c*) high charges for fodder and corn (which became very scanty in those years) for bullocks that are kept for watering gardens and trees, &c.

Addition of area.—The subjoined statement shows the area of trees added and planted during the years under report.

Description of works.	1890-91.	1891-92.	1892-93.	Total.
	Acres.	Acres.	Acres.	Acres.
Nurseries	8·20	275·72	...	283·92
Plantations	...	106·36	...	106·36
Groves	18·02	28·83	1·75	48·60
Avenues	...	...	...	...

Out of the area 283·92 acres under nurseries 275·72 acres have been newly added to the nurseries at Hánsi Bir, &c., and 8·20 acres have accrued by adjustment of the new settlement operations.

The 106·36 acres under plantation have been newly planted out and added to the plantations at Hánsi Bir and Bhiwáni Tahsíl buildings.

The area 48·60 under groves has been added as follows:—

Transferred from nurseries in the Hánsi tahsíl	18·02	Acres.
Construction of new garden at Hánsi	28·83	„
Bhiwáni Municipal garden newly constructed and added ...	1·75	„

Reduction of area.—The subjoined memo. shows the area given up, transferred or of failures during the triennial period:—

Description of works.	1890-91.	1891-92.	1892-93.	Total.
Nurseries	22·68	0·65	...	23·33
Plantations	10·07	44·0	...	55·07
Groves	1·72	...	...	1·72
Avenues	...	...	...	...

The area 23·33 under nurseries has been reduced as follows:—

Transferred to groves in Hánsi tahsíl	18·02
The correction of last years wrong area of Dhanoor garden, corrected during 1890-91	0·44
Area reduced according to settlement figures	4·22
Transferred to Hánsi new District Board garden	0·65

The failure of area 54·07 acres under plantation is owing to trees having died away on account of want of water.

The figures 1·72 under groves have been shown in accordance to new settlement operation.

Nurseries.—Two new nurseries were founded during the period under review and two existing ones abandoned. The seven existing ones have been duly maintained. These are all in fair condition, the irrigation being effected from wells and canal.

Plantations.—There are two plantations at Hánsi Bír and Bhiwáni Tahsíl buildings. It may also be worthy of note, that the Hánsi Bír plantation produces a timber crop and is irrigated with canal cuts.

Groves.—There are altogether seventeen groves in this district, four new groves have been increased during the period under report as follows :—

1. District Board garden at Hánsi.
2. Municipal Board garden at Bhiwáni.
3. Narnaund encamping ground.
4. Hánsi encamping ground.

The trees in the Police Rest-house compounds still sadly require being attended to, of the rest some are full grown trees and need no further care while others still need care and maintenance.

Avenues.—The total length of roads stocked with trees at the beginning of the year 1890-91 was 108·26 miles, and no increase or decrease has accrued during the triennial period under report. There are 29 roads on which avenues consisting of single lines of trees exist as will be seen from the accompanying map on which these are fully illustrated.

General remarks.—The instructions received from the Conservator of Forests on the subject of planting such trees, the leaves of which can be utilized as fodder for cattle, have been carefully attended to in this District.

The inadequate rainfall of the first two years, of the period under report, made the season generally unfavorable for arboriculture ; the rainfall of 1892-93 was conspicuously above the average of the two years preceding, and, while it enabled the arboriculture to make way, it did not repair the damages of previous years.

FEROZEPORE DISTRICT.

It will be seen that the same number of trees were planted as in the last triennial period, *i.e.*, 19 miles against 19 miles.

Twenty-five miles of trees have also been planted by the Canal Department along the banks of the canals, and ten acres have been planted in the Mamdot estate under the Court of Wards.

A certain amount of interest has been taken in fruit cultivation, and the Arabian date trees planted by Mr. O'Brien are in a flourishing condition and beginning to yield fruit.

The income from the sale of old trees, &c., amounted to Rs. 5,320. This shows a falling off of Rs. 200.

Expenditure has been reduced by Rs. 3,000 per annum, as it does not appear that there has been any loss in efficiency ; this is satisfactory. This is I believe greatly due to the supervision exercised by the Darogha Muhammad Yusuf and Vice-President Rái Maya Dás.

The result of three years' operations under report is to be found in the accompanying seven returns prepared in forms received from the Conservator of Forests, Punjab, in forwarding which I beg to state as follows :—

About 19 miles of new trees have been successfully planted during the past three years, most of these owe their successful growth to the local canals, the trees were watered by digging $1\frac{1}{2} \times 1\frac{1}{2}$ feet ditches along sides of the roads. Very few trees comparatively speaking have been brought up with the water taken from the Sirhind Canal, it having been found by experience that only two kinds of trees, *viz.*, *tali* or *shisham* and *kikar* or *babul* thrive by canal irrigation if sown in the manner stated above.

In addition to the above there are about 375 miles of successfully grown trees on both sides of the inundation canals of the District, out of which 25 miles have been planted during the three years under report and 350 miles existed before. These trees belong to the owners of the land who gave it free of charge for the construction of the district canals, but the trees were planted by the Canal establishment.

Similarly in the Mamdot estate, now under Court of Wards, 70 acres of land have been successfully planted with trees, of this 60 acres existed before and 10 acres were added during the last three years.

Thirty acres of land of the Government plantation at Kehruwála in the Fázilka Tahsíl are regularly brought under operation from year to year, the trees grown are mostly *kikar*. This plantation however being Government property a separate report goes up from time to time.

A nursery of mango trees is kept up at Zírah as also one at Hussainiwála, out of which seedlings are distributed to the people of the district who are gradually getting interested in planting fruit trees.

A great many trees of Arabian dates introduced by Mr. O'Brien, the then Deputy Commissioner, have yielded fruit, but in small quantities, and the fruit is somewhat poor as the trees are still young, and it has only lately been found out which are males and which are females, because unless the flowers of the males are either blown by the wind or carried by hand and thrown over the female flowers no fruit can be expected. Recently the District Board have resolved to ask Rái Bahádur Doctor Thákur Dass, Officiating Civil Surgeon, to write a memo. from his own experience as to the mode of curing date fruits. Rs. 5,320 have been realized from the sale proceeds of old and matured trees during the year 1892-93. These trees were sold under the following arrangement.

When the Vice-President in charge has satisfied himself that certain localities have such old and matured or fallen trees as should be sold as well as the annual trimmings of trees, he directs the head Darogah to proceed to the spot and take one or more local members with him and sell the trees at the time and place of which due notice was previously given to the villages of that neighbourhood. It is also noteworthy that the report for the year 1889-90 showed an expenditure of Rs. 10,129, which amount has been reduced to Rs. 7,002 per annum, thus by careful management more than Rs. 3,000 per annum have been saved, while the arboriculture operations have been carried on with the same results, in fact better, and I have much pleasure in stating that credit is due to Darogah Muhammad Yusaf who is an honest and painstaking official and knows his work thoroughly.

PESHAWAR DISTRICT.

Note by Commissioner.

Has the honor to forward in original with statements the Pesháwar District triennial report on arboriculture, and to remark that good progress has been made, and the Pesháwar District has been fortunate in having had as Deputy Commissioner during the greater part of the three years reported upon, an officer like Mr. Mørk, who took great interest in arboriculture.

The present Deputy Commissioner, Captain Deane, also takes a strong personal interest in the work, and many of the new roadside avenues in Yúsafzai are due to his efforts as Assistant Commissioner in charge of the Mardán outpost.

Report by Deputy Commissioner.

Rainfall.—The statement shows the average rainfall of past years under report. The figures are obtained from the register of rainfall prescribed by the Financial Commissioner, Punjab.

Nurseries.—About three acres of land were taken for nurseries in the Mardán, Swábi and Hashtnaggar Tahsíls, and four acres were transferred to groves.

Plantations.—As ample supplies of timber are floated down the Swát, Kabul, Bára and Indus rivers, no plantation for producing timber was planted in this district during the three years under report.

Groves.—As stated above 4 acres of land under nurseries was transferred to groves in the Pesháwar, Mardán, Hushtnagar, Swábi and Dáudzai Tahsíls.

Avenues.—186 miles of various roads in this district were planted with trees during the three years under review, of which 72 miles failed, and 114 miles remained fully stocked with trees at the end of March last. The cause of failure was that in some Tahsíls too much work had been undertaken which could not be looked after. A regular system for roadside arboriculture has been started and the work limited so that the success of such planting as is done may be ensured.

Income.—The income from the district arboriculture during the three years was Rs. 2,487, or an increase of Rs. 306, as compared with the figures of the previous years. This increase is due to the sale proceeds of grass from the Mackeson Park made over to the District Board by the Cantonment Committee.

The income in the Pesháwar Municipality under the same head was Rs. 8,602 or Rs. 564 more than the figures of the previous year, the cause of this increase is due to the sum of Rs. 1,560 received from the Executive Engineer, Péshávar Division, Military Works, as compensation for land given up from the Shábi Bágh garden for opening a new road from the city Railway Station to the Cantonment, this item if left out of account from this head, considering it of an extraordinary nature, there will then be a decrease of Rs. 996 which was due to the sale proceeds of old trees cut and sold from the Shábi Bágh garden before 1890-91.

Expenditure.—The expenditure on district arboriculture during the three years under report was Rs. 37,031 as follows:—

	Rs.
Gardens	11,008
Avenues, &c.	26,023

Rupees 11,008 were spent on the maintenance of ornamental gardens or Rs. 125 above the expenditure of previous years, this small increase requires no special remark.

Trees of various descriptions were planted throughout the district, at a cost of Rs. 26,023 or Rs. 12,542 over the expenditure of the preceding years.

The cause of excess expenditure is accounted for by the more expensive operations in connection with roadside arboriculture during the triennium under report. The detail of expenditure incurred on planting avenues, &c., is as follows :—

								Rs.
1	Jemadár @ Rs.	18	per mensem for	15	months	...	....	270
1	Do.	„ 13	„	9	„	...	...	117
1	Do.	„ 12	„	23	„	...	...	276
3	Do.	„ 10	„	10	„	...	...	300
2	Do.	„ 10	„	12	„	...	...	240
1	Do.	„ 10	„	12	„	...	...	120
1	Do.	„ 8	„	24	„	...	...	192
3	Do.	„ 8	„	12	„	...	...	288
10	Málies	„ 8	each for	24	„	...	...	1,920
1	Do.	„ 7	for	12	„	...	...	84
8	Do.	„ 7	„	12	„	...	...	672
23	Do.	„ 7	„	1	„	...	...	161
8	Do.	„ 6	„	12	„	...	...	576
19	Do.	„ 6	„	12	„	...	...	1,368
112	Do.	„ 5	„	12	„	...	...	6,720
48	Do.	„ 5	„	12	„	...	...	2,880
110	Do.	„ 5	„	12	„	...	...	6,600
1	Do.	„ 4	„	12	„	...	...	48
1	Do.	„ 3	„	15	„	...	...	45
Avenues planted at Yusafzai Sub-Division and Nowshera							...	1,850
Water pots								446
Making fences								74
Drains for watering trees								151
Digging holes								137
Sinking wells								406
Revenue on land taken up for nurseries								2
Carriage of plants								41
Cost of baskets, well expenses, &c.								39
				Total		...	...	26,023

The expenditure in the Peshâwar Municipality under the head of arboriculture was Rs. 18,865, or Rs. 166 more as compared with the figures of the previous three years.

This small increase calls for no special remarks.

General remarks.—All parts of the District in which there is any system of irrigation are well planted with trees, and great success has attended the planting of the Hashtnaggar and Mardán tracts irrigated by the Swát River Canal.

The trees, black *siris* and *doon* or white *siris* have all been introduced experimentally and have so far done well, the trees particularly so.

Long tracts of very dry and exposed country have now to be dealt with. This is being done as far as possible by a gradual extension of roadside wells and the phulái (*Acacia modesta*) and the Kábuli kikar are being planted. These though slow growing are particularly suited to the country. The tamarisk has been largely planted in the District, and where it is possible to grow it, it does exceedingly well.

KOHAT DISTRICT.

Rainfall and character of harvests.—The annexed table shows the rainfall for each of the past three years (1890-91 to 1892-93) as compared with the average fall for past 26 years as per table received from Financial Commissioner's office :—

Year.	1st April to 30th September.	1st October to 31st March.	Total.
1890-91	14·46	15·51	29·97
1891-92	5·52	1·21	6·73
1892-93	19·70	5·94	25·64
Average for 26 years	11·99	6·31	18·30

There were unusually heavy rains during June, July and August 1890. Subsequently, however, rain failed till October 1890, after which, there were again heavy rains up to the close of the year under report. The year (1890-91) was therefore favorable for arboriculture as far as rain is concerned, but unluckily winged locusts appeared in considerable numbers by the end of December 1890 and remained in the district, the whole of the winter, causing considerable damage to the trees. Again about the middle of April 1891, the plains of the Kohát tahsíl became alive with young locusts. Vast armies marched directly upon the well-wooded station of Kohát. They invaded every quarter of it and in about ten days there were no leaves left anywhere. The gardens were stripped clean. The trees were so damaged that their stems and boughs were skinned and many of the trees in the gardens and in the roadsides avenues dried up entirely. The only tree which the hoppers disliked was the "bakain." The next year was also most unfavorable for arboriculture. There was a little rain occasionally though not timely till August 1891, but subsequently, it almost entirely failed. The locusts which appeared in the early part of the year did a good deal of damage to trees, a large number of which had died.

Although good rain fell last year (1892-93) it was not timely. There were no rains to end of June 1892. Heavy rain fell in July and August 1892 and again it ceased till the end of December 1892. Again there were good rains till the close of the year. From the above, it will be seen that the triennial period under report was far from being favorable for the extension of arboriculture in the district.

General remarks as regards extension of arboriculture.—This district has been classed as one of the very dry ones and its circumstances are not favorable to arboriculture.

The Khattak iláka gets so little water that hardly any scheme of arboriculture can be successfully carried on there. In the Barak Tappa of that iláka, however, trees, are being planted by the people themselves near wells, &c. In the Hangu tahsíl, there is no road in charge of the District Board suitable for establishing avenues. The people however, themselves plant trees, where suitable places can be found, though owing to the large herds of goats possessed by every village, much damage is done and comparatively few trees arrive at maturity.

The only places where any improvement can be effected are, therefore, Kohát and its neighbourhood.

As far as funds and water were available, an endeavour was made to extend arboriculture in this part of the district, but owing to unfavorable circumstances referred to above, but small progress is apparent. Of the ten roads mentioned on page 70 of the printed Arboriculture Report for 1889-90, planting of trees in avenues had previously been carried on only on the first two roads, *viz.* :—

1. Jarwanda circular road;
2. Bezadi circular road;

but since then, the trees have also been planted on the following roads and are in very flourishing condition :—

6. Part of road leading to Mírkhweli from tahsíl gate to gap.
8. Road from tahsíl gate to meet Hangu road near the Jail.
9. Ditto ditto ditto ditto Public Works Godown.
10. Ditto ditto ditto ditto Police Lines.

The proposed road No. 5 (proposed extension of Jarwanda road to meet the Hángu main-road) has not been constructed.

The only roads therefore remaining are :—

3. Tappi and Bahádar Kote road.
4. Kharmatu and Dhoda road.
6. Part of road leading to Mírkhweli from gap.

The District Board have lately appointed *malís* on these roads and have placed them each in charge of a native gentleman (being also a member of the District Board.)

Nurseries.—There are two small nurseries on the Jarwanda road and one in the Municipal garden, containing "kachnar," pipal, mulberry, but the supply is not sufficient and plants are procured from private gardens, &c. The plants and seedlings of all sorts required for roadside avenues are easily procurable and no difficulty has ever been experienced for want of sufficient plants in nurseries in charge of District or Municipal Boards.

A new nursery is about to be started at Hángu in the new garden made by Mr. Spencer, Extra Assistant Commissioner, in charge of Thal Subdivision, and it is proposed to make a trial of the "tún" seed which will be sent for from Deputy Conservator of Forests, Murree Division.

Avenues.—The annexed statement will show the progress made during each of the past three years in planting trees in avenues in charge of the District and Municipal Boards :—

Name of Road.	Number of trees on 31st March 1887.	Number of trees planted during 1887-88 to 1889-90.	Number of trees died during 1887-88 to 1889-90.	Number of trees remaining on 1st April 1890.	Planted during three years.				Number of trees died during three years 1890-91 to 1892-93.	Number of trees remaining on 31st March 1893.
					1890-91.	1891-92.	1892-93.	Total.		
Bezadi	765	702	561	906	161	646	492	1,299	428	1,777
Jarwanda	1,426	2,305	418	3,313	150	1,691	1,139	2,980	1,908	4,385
Five small roads within Municipal limits as follows :— (1). Tahsíl to Public Works Department, Godown. (2). Tahsíl to Police lines ... ... (3). Tahsíl to Hangu road *viâ* Jail ... (4). Dharmsál gate to Hangu road ... (5). Tahsíl gate to gap on Mírkhweli road.	..	...	...	...	626	494	198	1,318	774	544
Total	...	...	...	4,219	...	...	...	5,597	3,110	6,706

Owing to the unfavorable circumstances above mentioned, no extensive operations could be carried on during the period under report, tree planting being confined to a few miles on some of the roads near Kohát Station.

In 1890-91 the planting was extended to about 1½ miles of roads within Municipal limits and about ½ mile on Mírkhweli road. Of the latter nearly ¼ mile failed, but the plants on the remaining roads are in good condition, being watered from Toi, springs and wells. Subsequently, however, young trees and seedlings on the roads were almost entirely eaten up by locusts. Willow cuttings were then planted which grew well.

In 1891-92, owing to drought and consequent diminution of water in Toi, on which the watering of the trees on the two principal roads, *viz.* :—

Bezadi and Jarwanda ;

depends, only small progress could be made on these roads. The work done consists chiefly of filling up gaps and blanks and preservation of trees formerly planted.

There were four lines of trees on the Jarwanda road. Another line was planted with willow cuttings.

The soil of these roads (*viz.*, Jarwanda and Bezadi) is not good, where mulberry and other kinds of trees do not grow well, but the trial of planting pipal trees has proved a success, most of the trees on these roads have attained a height of 5 to 40 feet and are in flourishing state. Some of them were lopped in 1892-93, but the timber produced was not worth anything.

A marked improvement has however been made in planting of trees in avenues on roads within Municipal limits. The soil is good and suitable for plantation, mulberry, kachnar, bakain, pipal, ber, shisham and willow are the trees planted on these roads. They are all in good condition except ber, which takes a long time to attain maturity. Many of them have attained a height of 5 to 20 feet. 1,318 trees were planted on these roads out of which 774 or 58 per cent. died owing to their having been damaged by locusts.

Groves.—There are no groves in the district except two small ones and nothing has been done to extend the area under this head, as the District Board has a good deal to do in the way of planting trees in avenues on roadsides.

Method of planting.—Cuttings are planted and seeds are sown in nurseries from which plants and seedlings from 3 to 5 feet are removed and planted mostly in the spring (15th February to end of March) and partly in rainy season (August and September) at intervals of 10 to 15 feet and are generally fenced with thorns. The plants are watered every second day up to one year and after that every third or fourth day till they attain sufficient height.

Ornamental garden.—There is only one public garden at Kohát in charge of the Kohát Municipal Board which has now greatly improved in spite of the fact that fruit trees were mostly eaten up by locusts in 1891.

It contains various kinds of fruit trees such as a grapes, guavas, mangoes, plantains, pomegranates, loquats, Maltese, oranges, jamans and also bamboos. Fruit trees are annually brought from Lahore for planting in the garden.

The following statement shows the receipt and expenditure of the garden during the past six years :—

Year.	Receipts.	Expenditure.			Deficits.	Surplus.	Remarks.
		Pay of establishment.	Miscellaneous expenses.	Total.			
	Rs.	Rs.	Rs.	Rs.	Rs.		
1887-88	445	394	233	627	182	...	Per Executive Engineer's No. 318/2149 dated 14th July 1893.
1888-89	573	396	372	768	195	...	
1889-90	546	394	378	772	226	...	
1890-91	525	436	80	516	...	9	
1891-92	342	448	188	636	294	...	
1892-93	566	572	492	1,064	498	...	

The increased expenditure during 1892-93 is owing to a large number of fruit trees having been sent for from Peshawar and Lahore to re-place the plants eaten up by locusts. Flower seeds costing about Rs. 150 had also to be sent for from Government Agri-Horticultural Gardens, Lahore and Saháranpore, as no stock of seeds was left in consequence of the damage caused by locusts. Had this garden been saved from the ravages of locusts it would have become self-supporting by this time.

Income and expenditure.—The annexed statement shows the income and expenditure on account of arboriculture excluding ornamental gardens during each of the last three years as compared with the preceding three years :—

Year.	Income.	Expenditure on arboriculture.			Remarks.
		Establishment charges.	Miscellaneous.	Total.	
	Rs.	Rs.	Rs.	Rs.	
1887-88	...	312	47	359	
1888-89	...	310	...	310	
1889-90	23	290	230	520	
1890-91	37	402	646*	1,042	* Includes about Rs. 400 on account of digging pits for planting trees within Municipal limits.
1891-92	77	359	372	731	
1892-93	30	555	233	788	

The income realized is on account of sale-proceeds of grass on roadsides. No income has been realized from lopping of trees or sale of timber, as fuel is very cheap and easily procurable in this district.

The following establishment was employed during each of past three years on the roads :—

Year.	Number of Rangers.	Rate per mensem.	Per annum.
	District Fund.	Rs.	Rs.
1890-91	5 Rangers	25	300 } 372
	1 Bhishti	6	72 }
1891-92	5 Rangers	22	264 } 336
	1 Bhishti	6	72 }
1892-93	6 Rangers	28	336 } 408
	1 Bhishti	6	72 }
	Municipal Fund.		
1890-91	5 Rangers	30	30.
1891-92	2 Ditto.	12	144
1892-93	2 Ditto.	12	144

Cultivation of fruit trees.—No attempt has hitherto been made to cultivate and distribute fruit trees among villagers.

About one maund of imported date palm seeds was obtained in 1889 with a view to ascertain if this most valuable and useful tree can be cultivated with any degree of success in this district, which at the best, is an unfavourable one for arboriculture generally. About 35 seers of them were sown in pots and boxes in the Municipal garden in accordance with the directions received from the Director of Land Records' Office. The seedlings were most flourishing, some of them being up to 9 inches in height. In March 1891 the seedlings were transplanted in the ground and a great number of them were distributed among the leading men and agriculturists of the district. The seedlings soon after they were transplanted were much damaged by the locusts.

Seedlings were also subsequently distributed in the Hangu tahsíl and Khattak iláka, but I regret to say that there has been complete failure in this matter.

Most of the seedlings distributed have dried and those that are remaining are not likely to grow to maturity.

12 off-sets which were planted in the Municipal garden and all except one have died.

There are a large number of flourishing gardens in the vicinity of Kohát and although much damage was caused by locusts, they are in a flourishing condition.

Much energy is being displayed by the people in planting fruit trees which are brought annually from Lahore and elsewhere.

Last year (1892-93) a good deal of the tangled jungle which was the source of unhealthiness to Kohát and Cantonments was removed and something was done in the way of pruning and thinning of fruit trees.

Planting of fodder trees.—Full account has been given on the subject in the last triennial report and nothing has been done in this direction during the period under report.

ROHTAK DISTRICT.

Rainfall.—The rainfall of the triennial period is shown in Statement No. I, the figures of which have been obtained from the Arboricultural Prospect Reports.

The rainfall during the last three years in the four tahsíls is given in the subjoined memo :—

Tahsíl.	1890-91.	1891-92.	1892-93.
Rohtak	23·57	14·86	32·28
Sámpla	26·83	26·27	30·39
Jhajjar	21·01	20·83	33·55
Gohána	30·23	27·11	37·52

The rainfall during 1890-91 was above, and during 1891-92 below, the average, of the past years.

It will be observed that the year 1892-93 was one of exceptionally heavy rainfall, notably so during the winter months, being 32·28 against 20·19, the average of the past years.

Nurseries.—No new nurseries were formed during the period under review, nor were any existing ones given up. The existing ones are at the head-quarters of each tahsíl and two in the Sadr Station. The area under nurseries at the beginning of the year 1890-91 was 1·41 acres. To this were added 2·27 acres during the three years under review. Of this an area of 1·87 acres was transferred during the course of the years under report to groves, thus leaving 1·81 acres under nurseries at the end of the year 1892-93. It is proposed to establish nurseries at Madina, Kathura, Jasia, Siláni and Jehángírpur to supply trees to that part of the district. During the period under report 17,787 plants were removed to the different roads from the nurseries noted below :—

Tahsíl Rohtak	4,146
Tahsíl Sámpla	3,627
Tahsíl Gohána	6,814
Tahsíl Jhajjar	3,200
Total ...	17,787

The varieties of trees in the nurseries consist chiefly of shisham, ním, pipal, mulberry and jaman.

Avenues.—There are altogether 29 roads on which avenues exist as will be seen from the accompanying map on which these are fully illustrated. These comprise an aggregate length of 222 miles which are stocked with 101,239 trees.

The memo. subjoined shows the result of arboricultural operations during the three years:—

Years.	Trees remaining at the beginning of the year.	Trees planted during the year.	Trees died.	Remaining at the close of the year.
1890-91	87,542	4,910	771	91,681
1891-92	91,681	4,944	974	95,651
1892-93	95,651	6,497	909	101,239

After the submission of the report for the year ending 31st March 1890 28·50 miles have been planted out in roadside trees, details of which will be found in the abstract given below:—

Name of Road.	*Number of miles extended.*		
	1890-91.	1891-92.	1892-93.
Rohtak-Kharkhaudah	...	...	6
Bahádargarh-Jhajjar	...	2	...
Rohad-Bádli	...	3	2
Delhi-Sirsa road	3	4	2
Rohtak-Bhiwáni	...	...	3
Jhajjar-Beri	2	...	1
	5	9	14
Deduct on account of failure	3½	½	...
Balance	1½	8½	14

Work done by private persons.—The subjoined memo. will give the names of private persons who planted trees at their own expense on the Jhajjar-Farrukhnagar and Jhajjar-Mandauthi road:—

Name.	Area.	Number of trees planted.	Species of trees planted.
Rám Chand, Mahájan of Siláni	2 bighás kachha	70	Ním, pipal, mulberries.
Budh Rám, Brahmin of Chhudáni	Ditto ...	82	Ním, pipal.

Financial results.—The following table gives the income and expenditure for the last three years:—

Particulars.	*During,*			Total.	Surplus.	Deficit.
	1890-91.	1891-92.	1892-93.			
INCOME.						
Sale of plants	5	2	...	...	...	...
Lopping of trees	247	1,262	695	...	...	...
Miscellaneous	...	...	321	...	...	...
Total	252	1,264	1,016	2,532	...	...
EXPENDITURE.						
Nurseries	1,146	929	828	...	...	...
Avenues	3,910	5,052	4,838	...	...	...
Establishment	276	324	171	...	...	...
Total	5,332	6,305	5,837	17,474	...	14,942

The outlay of the year 1892-93 includes an item of Rs. 326 incurred on jhallárs erected on the water-course for the purpose of watering trees.

Damage to trees.—Much damage is constantly done to roadside trees by cattle and wild animals, *viz.*, porcupines, &c. To remedy this a number of brick protectors have been erected on important roads.

Establishment.—The establishment kept up by District Board is as follows :—

1	Head Máli	Rs.	8	per mensem.
5	Málís	„	6	„
40	Ditto	„	5	„
21	Bhishtís	„	6	„

Pruning.—It is very difficult to get the ignorant coolies one has to engage as málís to understand about the treatment of trees, and pruning is very much neglected or done in a ruthless manner.

Cultivation of date palm.—Some off-sets of the imported date palm were supplied by the Director of Land Records in the month of January 1891 for experiment in this district. Most of them were planted out in the Station and some few at Jhajjar in the Rest-house compound. They are doing well. Those planted in the Station near the canal cut and tanks are springing up well and are 4 or 5 feet high. A maund of date seed was also procured from Mooltan and sown broadcast in the compound of the District Board Office.

It germinated and the young plants are about 2½ feet high. I propose planting them out during the coming rains at different tanks of the villages and along the canal cut.

Afforesting reserved portion of Bírs.—About 60 bighas have been put under kikar seed in the Bír Sunárwála Khurd during the last rains, and the plants are coming on satisfactorily and I think will make a nice plantation.

LAHORE DISTRICT.

Rainfall.—The following table shows the rainfall of the district in each of the past three years :—

District.	1890-91.	1891-92.	1892-93.	Remarks.
Lahore	29·93	7·98	20·31	

Though the fall in 1891-92 was extremely deficient, the average for the three years was an improvement on the three preceding years, being 19·406 and 17·59 respectively.

The following table shows the rainfall for each tahsíl during the past three years :—

Tahsil.	1890-91.	1891-92.	1892-93.	Remarks.
Lahore	29·95	7·98	20·31	
Kasúr	27·44	7·40	31·54	
Chúnián	18·14	7·16	22·71	
Sharakpur	25·56	11·79	22·94	

Calamities.—The very deficient rainfall of 1891-92 is perhaps the only calamity to be chronicled.

The reports of all four Tahsíldárs on the condition of the avenues, groves and nurseries under their care are fairly satisfactory. The District arboricultural establishment was principally employed on roadside avenue planting and tending roadside trees.

The formation of new nurseries and planting of roadside groves of shelter-giving trees has received and is still receiving attention.

A map showing the extent to which the roads in the district have been stocked with trees and the position of nurseries and groves is enclosed.

Avenues.—During the past three years a total length of 32·414 miles of avenues has been added to the roads in the district; the following kinds of trees being used, *viz.*, shisham, frash, kikar, pipal, tut, jaman, shisham predominating.

This however does not include tree planting operations within municipal limits, carried on by Municipalities, operations of which have been shown separately.

The following is a detail of lengths added in each of the four tahsíls :—

Tahsils.	1890-91 to 1892-93.	1887-88 to 1889-90.
	Miles.	Miles.
Lahore	12·246	12·629
Kasúr	12·281	10·429
Chúnián	7·887	20·394
Sharakpur	2·000	32·000

The amount of work done in tahsíls Lahore and Kasúr compares favourably with the results obtained in the preceding three years. In tahsíls Chúnián and Sharakpur the attention of Tahsíldárs was confined to preserving previously planted trees. Gaps in existing avenues were also planted out by the establishment.

Nurseries and groves.—In tahsíl Lahore new nurseries were planted at Faizpur and Hudiára during the years 1890-91 and 1891-92 respectively, one new grove measuring 1·25 acres was planted during the year 1891-92 at Kilás Mári on Harike road. 340 trees were added to the old grove near the Luliáni encamping ground during 1891-92 and 1892-93.

Cultivation of fruit trees by private persons.—Fruit trees were planted by the following persons in :—

Tahsil Lahore.

Mian Jamál-ud-dín, at Kot Nabi Bakhsh.
„ Amín Dín, son of Kamál Dín, at Kot Nabi Bakhsh.
Nawáb Násir Ali Khan, at Khalíqabad.
Khushal Singh, Zaildár, at Ghawind.
Nihál Singh, son of Rám Singh, at Ghawind.
Shám Singh, son of Jamiat Singh, at Kána Kácha.
Vír Singh, Wazíri Mal, and Chait Rám, at Bohgan.
Chanda Singh, at Harpálke.
Chanda Singh, son of Faiza, at Ghang.

Tahsil Sharakpur.

Báwa Ganga Rám, at Mahmúdpur.
Abdulla, at Mári.

Establishment and supervision.—The Sub-Overseers at each of tahsíls Kasúr, Chúnián and Sharakpur and the salutri at tahsil Lahore, supervised all planting operations in addition to performing their own duties.

The following is an abstract of the detailed statement of establishment employed, and the cost during the past three years :—

Tahsil.	Establishment.			Cost.		
	1890-91.	1891-92.	1892-93	1890-91.	1891-92.	1892-93.
	Men.	Men.	Men.	Rs.	Rs.	Rs.
Lahore	12	14	12	711	798	656
Chúnián	12	13	9	500	587	391
Kasúr	13	9	10	741	510	596
Sharakpur	9	9	9	475	495	494
Total	46	45	40	2,427	2,390	2,137

A reference to the detailed statement of expenditure will show that out of Rs. 3,047, Rs. 3,644 and Rs. 3,865 expended during the past three years, Rs. 2,427, Rs. 2,390 and Rs. 2,137 respectively, were for establishment.

Financial results.—The financial results of the period under report will be found in the following statement:—

Tahsil.	Income.			Expenditure.		
	1890-91.	1891-92.	1892-93.	1890-91.	1891-92.	1892-93.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Lahore	163	146	138	825	906	853
Kasúr	42	195	48	721	830	1,704
Chúnián	322	529	501	721	703	517
Sharakpur	129	455	164	780	1,205	791
Total	656	1,325	851	3,047	3,644	3,865

Statements of arboricultural operations within the Municipality of Lahore, together with a memo. drawn up by the Secretary, are also submitted.

Report from Municipality.

Besides maintaining the gardens, the Committee's operations were confined to the filling of gaps in existing roadside avenues and planting trees on the roadsides.

It is to be regretted that the operations have not been so successful, but on most of the roads the soil is extremely bad and water difficult to get, while the traffic is so large that young trees are protected with much trouble.

KARNAL DISTRICT.

Rainfall.—The rainfall for the period under review is exhibited in Statement No. I. It will be observed that while during the year 1891-92 the rainfall is little above the average, that, during the remaining two years is considerably so, though as regards seasons the winter rains of 1891-92 were much below the average, being only 1·32 inches.

Nurseries.—No additions have been made to the existing nurseries which are three in number in this district, *viz.*, one at Karnál, one at Pánipat and one at Kaithal, the area comprised in these amounts to 8·53 acres; these are irrigated from wells and are considered sufficient for the wants of the district.

The number of trees planted from these nurseries on the various roads and in groves during the period under review amount to 6,090. The number of young trees and seedlings present in the three nurseries at the end of the triennial period, *i.e.*, ending 31st March 1893, was 6,500.

Plantations.—Statement No. III is blank, as there are no plantations of the kind in this district.

Groves.—The existing area under groves was increased by 5·33 acres during the period under report; this is due to plots of land attached to the Munsiff's Court at Pánipat and the Horse Fair ground at Karnál having been planted with forest and fruit trees during the year 1892.

In the former 556 fruit, 192 flower, and 452 forest trees; and in the latter 212 mango, jaman and shisham trees have been planted. Both these have been established with the object of affording shade as well as being useful as a fruit garden.

The number of groves in this district is therefore increased from 13 to 15; these contained 3,304 trees in good condition at the end of the period under report which is exclusive of the 104 which died during the triennial period. Of the 3,304 trees 1,814 are full grown trees and the remainder under one year old which are making favourable progress and are being properly tended and looked after.

Avenues.—Avenues are being extended gradually on the principal lines of communication despite the difficulties which have to be contended with on some of the roads of the district, *e. g.* of supplying water to the young trees during the dry months of the year owing to water being situated at some distance from the roads.

The operations for the past three years were as follows:—

	Miles planted.	*Trees.*
1890-91.		
Karnál-Assaud road	1·7	600
Pánipat-Nagla „	0·79	280
Panipat-Salwan „	0·91	320
Karnál-Kaithal „	0·84	300
Karnál-Fírozpur „	1·14	381
Kaithal-Thánesar „	0·58	200
Pánipat Railway Station road	0·29	100
Total	6·25	2,181
1891-92.		
Karnál-Kaithal road	1·7	600
Pánipat-Nagla „	0·25	80
Panipat-Salwan „	0·59	207
Kaithal-Karnál „	0·34	116
Total	2·88	1,003
1892-93.		
Pánipat-Salwan road	1·75	650

Besides the above 671 young trees were planted to fill in gaps during the triennial period.

The number of trees that died during the same period amounts to 1,012.

Of these 281 relate to the Karnál and Kaithal road, a portion of which having been abandoned owing to the Railway line, the trees on this were sold by public auction and were cut down by the purchaser, about 170 in number.

Damage to trees by cattle.—To prevent damage by cattle young trees are protected by thorn and mud fencings, besides being taken care of by chaukidárs who are maintained especially to patrol these roads for this purpose, and the result appears to be satisfactory. Cattle found damaging trees are invariably taken to nearest pound.

Lopping.—Much is not done in this line. It is carried out whenever absolutely necessary, but transplanting is carried out invariably in February and also during the rains.

The subjoined memo. exhibits the result of the arboricultural operations of the past three years:—

Year	Trees remaining at the beginning of the year.	Trees planted during the year.	Died.	Remaining at the close of the year.	Remarks.
1890-91	24,829	2,181	287	26,723	
1891-92	26,723	1,003	391	27,335	
1892-93	27,335	* 2,062	334	29,053	

* These include the 1,412 trees planted in the Gora Barrack (Munsiff's Court compound, Pánipat) and Horse Fair ground at Karnál—*vide* Statement V.

Income and expenditure.—The following table exhibits the income and expenditure for the past three years:—

Particulars.	During 1890-91.	During 1891-92.	During 1892-93.	Total.	Surplus.	Deficit.
Income.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Sale of fruit and vegetables	304	240	321	865		
Sale of trees	484	208	143	835		
Lopping of trees	...	6	...	6		
Sale of grass	5	10	32	47		
Total	793	464	496	1,753		
Expenditure.						
Nurseries.						
Establishment	240	272	301	...		
Cost of feed of bullocks, &c.	151	168	58	...		
Repairs to well, hut, &c.	...	16	...	...		
Miscellaneous	155	51	61	...		
Avenues.						
Supervising establishment	552	552	552	...		
Watering charges	2,402	2,738	3,466	...		
Protecting do.	329	324	340	...		
Tools and Plant	22	8	12	...		
Planting, fencing and other miscellaneous expenses	1,207	767	611	...		
Total	5,059	4,896	5,401	15,356	...	13,603

Date palm.—The result of the Gulf date palm sowings, the seeds of which were distributed to the Rais and landowners in the district, has not been satisfactory; some reported that the seed did not germinate, while others that the plants died after germination, and about a hundred plants only are said to be doing well; some seed was also sown in the District Board nursery at Karnál and the plants were progressing favourably till they were unfortunately rooted up and destroyed by wild pigs save one plant which still exists. There are also 20 other plants out of the seeds sown in 1889 which are all doing well, besides five plants raised from the offsets imported from Egypt in 1890-91.

JHELUM DISTRICT.

Rámgarh.—The average rainfall in each tahsíl of this district during the three years under report was as follows :—

Tahsíl.	1890-91.	1891-92.	1892-93.	Average.
Jhelum	44·19	17·88	32·47	31·51
Pind Dádan Khan	25·28	5·31	26·47	19·02
Chakwál	33·54	8·21	33·05	24·93
Tálágang	27·37	11·52	27·42	22·1
Total ...	130·38	42·92	119·41	97·56
Average ...	32·59	10·73	29·85	24·39

The average rainfall for the three years now under report was greater than that of the three years last reported on.

Nurseries.—The additional area brought under nurseries was as follows :—

In 1890-91	... ...	·24 acres.
In 1891-92	... ...	·082 „
In 1892-93	... ...	·968 „

as compared with the year 1890-91, the year 1891-92 shows a decrease of ·158 of an acre; while the year 1892-93 shows an increase of ·728 of an acre; and the year 1892-93 as compared with that of 1891-92 shows an increase of ·886 of an acre.

The small additional area in 1890-91 was due to failure of rains; while in 1891-92, owing to the prevalence of locusts, the area was not increased, seedlings and cuttings being bound to suffer from their ravages.

None of the nursery area was transferred to any other head during the three years under report.

The plants in nurseries consisting chiefly of fruit trees and shisham were obtained, the former from cuttings and the latter from seed.

Plantations.—As there is no area in this district under "plantations" this statement is submitted blank.

Groves.—During the years under report there was no increase in the area under "groves."

Avenues.—The planting on roadsides was as follows during the year under report :—

Roads.	Years.	Total length newly planted.	Total length failed.
Belonging to District Board	1890-91 ...	18·959	1·914
Ditto	1891-92 ...	15·904	2·530
Ditto	1892-93 ...	19·517	2·574
Belonging to Municipal Committees	1890-91 ...	1·231	·405
Ditto	1891-92 ...	1·798	·152
Ditto	1892-93 ...	3·561	1·120

District Board Roads.—As compared with 1890-91 there was a decrease of 3·055 miles in the newly planted area in 1891-92 and an increase of 558 in 1892-93. The decrease in 1891-92 was due to less planting on account of the presence of locusts. The increase in area in 1892-93 is slight. It should, however, be here noted that this increase is not due to a large number of trees being planted, but to the system being adopted of planting trees at the distance of 30 feet apart instead of 20 as in previous years.

Municipalities.—The planting in 1890-91 was only in the Pind Dádan Khan Municipality. In 1891-92 small areas were planted by both Municipalities. The increase in 1892-93 was consequent on the small planting done in the two years previous.

The statement given below shows the number of trees which were planted, the number that failed during each year of the period under report:—

DISTRICT BOARD.

Name of Tahsil.	1890-91.		1891-92.		1892-93.	
	Planted.	Failed.	Planted.	Failed.	Planted.	Failed.
Jhelum	3,447	323	2,416	212	2,463	227
Pind Dádan Khan	646	...	385	20	551	131
Chakwal	812	162	620	126	532	56
Tálágang	917	112	1,013	421	450	161
Total ...	5,822	597	4,434	779	3,996	575
MUNICIPALITIES.						
Jhelum	...	...	334	40	505	143
Pind Dádan Khan	323	107	162	...	775	250
Total ...	323	107	496	40	1,280	393
GRAND TOTAL DISTRICT BOARDS, MUNICIPALITIES.	6,145	704	4,960	819	5,276	968

The total number of trees planted during the three years now under report was 16,351, of which 2,491 or 16 per cent. failed. The figures for the three years last reported on are 13,988 planted, of which 2,826 failed. From the above it will be seen that the period now reported on shows an increase of 2,363 in the number of trees planted and a decrease of 335 in the number of failures as compared with the period last reported on.

The trees planted on roadsides in the Jhelum tahsil were obtained from the Pira Ghaib Beli, Sheikhupura, and the garden at Chak Jamál; in the Pind Dádan Khan tahsil from the Choya Saidán Shah garden; in the Chakwál tahsil from small nurseries on the roadsides and in the Tálágang tahsil from nurseries near private wells of zamíndárs. All trees are looked after by the general establishment and are inspected from time to time by the Tahsildárs and also by other District Officers when on tour.

Income.—The income for the years under report is detailed in the statement below:—

Years.	Gardens.	Nurseries.	Total.
	Rs.	Rs.	Rs.
1890-91	723	1,924	2,647
1891-92	630	2,353	2,983
1892-93	474	916	1,390
Total	1,827	5,193	7,020
Total income from 1887-88 to 1889-90	1,837	3,036	4,873

The above figures show an increase of Rs. 2,157 during the three years now under report; this increase being due to a larger number of trees having died and being sold.

Expenditure.—The statement given below furnishes a detail of the expenditure during the three years under report:—

Years.	Gardens.	Nurseries.	Total.
	Rs.	Rs.	Rs.
1890-91	2,792	3,106	5,898
1891-92	3,084	3,428	6,512
1892-93	3,393	3,142	6,535
Total ...	9,269	9,676	18,945
Total expenditure during 1887-88 to 1889-90 ...	9,851	7,409	17,260

The above figures show an increase of Rs. 1,685 in the expenditure during the three years under report, due to cost for feed of cattle being higher on account of dearness of fodder and to the purchase of new water-lifts for the garden.

The following statement gives a detail of the establishment maintained during the three years under report:—

Tahsil.	Gardens.					Nurseries.				
	Málís on				*Coolies & Bhishtís on.*	*Jamadárs on*	*Pakhálís on*			*Coolies & Bhishtís on*
	Rs. 20.	Rs. 12.	Rs. 8.	Rs. 6.	Rs. 5.	Rs. 10	Rs. 12.	Rs. 8.	Rs. 7.	Rs. 5.
Jhelum	1	...	...	2	15	1	...	...	...	13
Pind Dádan Khán ..	...	1	...	...	3	...	1	2	...	3
Chakwál	...	...	1	...	2	...	...	...	4	...
Tálágang	...	...	...	...	1	...	...	...	2	5
Total ...	1	1	1	2	21	1	1	2	6	21

After deducting the total income for the three years from the expenditure for the same period, the net expenditure stands at Rs. 11,915, or an average of Rs. 3,971 per annum.

GUJRANWALA DISTRICT.

Rainfall.—The rainfall of the year 1890-91 and 1892-93 throughout was abundant and far in excess of the average fall, while that of 1891-92 was scanty and far below the average fall.

Nurseries.—The total area under nurseries is only 2·47 acres. Of this 18 kanals are in the Háfizabad tahsíl and the rest in the Gujránwála and Wazírabad tahsíls. There are however 8 or 9 nurseries in different localities in the Chenáb Colony Settlements covering an area of about 200 acres, which were planted during 1892-93. A regular establishment is provided for their maintenance, but as no reliable information on this subject is available at present I am unable to fill in the colonization figures in the statement under review.

Plantations and groves.—The Statements Nos. III and IV for plantations and groves are blank.

Avenues.—The planting operations were restricted to a few roads only. In 1890-91 the length of roads suitable for avenues was increased by 11·20 miles, making the whole length 388·83 miles. Of this 86 miles were stocked with trees in the previous years and another 11·41 miles in this year. Of the new miles planted 9·41 belonged to the Háfizabad tahsíl and 2 to the Wazírabad tahsíl.

In 1891-92 the operations seem to have been very limited in consequence of the scanty rains. Of the 4·50 miles planted during the year, 3·33 miles failed altogether.

The operations in the following year were however extended by 18·36 miles, of which 17·36 miles were successfully planted. The total length of roads fully stocked with trees at the close of 1892-93 is now 113·03 miles. Of this 56·75 miles are in the Gujránwála tahsíl, 25 miles in the Wazirabad tahsíl, and 28 miles in the Háfizabad tahsíl.

Besides the roads newly planted with trees several gaps and blanks were filled in on the existing roads already stocked with trees. The number of trees planted this way was 4,116.

The following is the detail of roads fully stocked with trees at the close of 1892-93:—

		Miles.
1.	Gujránwála and Rámnagar	9·25
2.	Ditto and Háfizabad	28·42
3.	Ditto and Siálkot	6·50
4.	Ditto and Shekhupura	3·00
5.	Ditto and Khángah	2·20
6.	Ditto and Emínabad	9·00
7.	Ditto and Dínanagar	4·00
8.	Wazírabad to Pindi Bhattián	17·00
9.	Dhaunkal to Grand Trunk Road	1·00
10.	Sohdra to Siálkot Road	·50
11.	Wazírabad to Daska	6·00
12.	Manchar to Háfizabad *viâ* Akálgarh	5·17
13.	Háfizabad to Vanike	7·00
14.	Hafizabad to Shekhupura	1·99
15.	Shekhupura to Pindi Bhattián	1·00
16.	Háfizabad to Jalálpur	5·00
17.	Háfizabad to Khángah	3·00
	Total	110·03

There is a steady progress each year in the tree planting in the Háfizabad tahsíl and is mostly due to the fact that the Chenáb Canal and its tributaries irrigate almost all the roads stocked with trees. The system adopted in other tahsíls is different. A number of bhishtís are employed for each road who look after the trees in their respective circles. These arrangements however are not satisfactory. A large sum of money is expended every year on roadside avenues, and the results obtained do not justify the outlay. Very early opportunity will be taken to bring the subject before the Board and a special Committee will be formed to discuss means for the better working of the scheme.

The Gujránwála Municipal Committee has also during 1892-93 planted about 1,385 trees on the Circular Road, of this 500 have died and 885 are still alive. The Municipal Committee however intends to extend its operations still further. No other Municipal Committee has done anything in this direction except the planting of a few trees here and there.

The planting operations are generally carried on during the months of January and February in the cold weather and of July and August in the hot weather during the rains.

The establishment maintained for the several roads in each tahsíl is as follows:—

	Per mensem. Rs. a. p.
GUJRANWALA.	
29 Watermen @ Rs. 4 each per mensem	116 0 0
1 Waterman	5 0 0
1 Guard	5 0 0
1 Jamadár	7 0 0
Total	133 0 0
WAZIRABAD.	
17 Bhishtís @ Rs. 4 each	68 0 0
2 Bhishtís @ Rs. 2 each	4 0 0
1 Jamadár	7 0 0
Total	79 0 0
HAFIZABAD.	
14 Watermen @ Rs. 5 each	70 0 0
1 Guard	6 0 0
1 Jamadár	10 0 0
Total	86 0 0
STATION ROAD.	
8 Bhishtís @ Rs. 4-8-0 each...	36 0 0
1 Mate	2 8 0
Total	38 8 0
COLONY SETTLEMENTS.	
9 Málís for nurseries @ Rs. 9 each	81 0 0
8 Coolies for nurseries @ Rs. 7 each	56 0 0
	137 0 0
Total	473 8 0

Seedlings from 2 to 4 feet high are dug out of the nurseries with a sufficient quantity of earth to protect the roots and then transplanted 3 feet apart. In some places bramble fencing is erected to protect them from cattle-trespass and in others only mud walls about 4 or 5 feet high, pierced with holes, serve that purpose until the seedlings acquire a sufficient height and are completely out of danger and independent of artificial irrigation. The trees mostly adapted to the soil are kikar, shisham and farash.

Fruit trees.—No fruit trees were planted during the years under report on any roads in the district. The 811 mango trees reported to be in a flourishing condition at the end of 1890-91 were destroyed by locusts in 1891-92. There are however, about 80 or 90 plants of Egyptian and Persian date palm in the Sadar gardens, which have attained a height of about 1 foot to 2 feet and seem to give promise of good results.

Some jowár seeds were received for experimental sowing from the Director of Land Records and Agriculture, Punjab, but the results obtained were not satisfactory. No further experiments were made in this direction.

Ornamental gardens.—The District Board of Gujránwála maintains four gardens. Of these the one at the Sadar is the largest and covers an area of about 20 acres; the others are only small gardens at the Sessions House, Gujránwála, and the Tahsíl gardens at Gujránwála and Háfizabad.

It appears that in 1892-93 about 1,500 orange plants were purchased from Lahore and planted at the Station garden for purpose of propagation and extension of Malta orange cultivation. This fruit is the staple produce of the Gujránwála gardens and forms the chief source of income. The gardens are more or less ornamental and the amount spent on their maintenance is not counterbalanced by an equal amount of receipts.

The Gujránwála Municipal Committee maintains two gardens and two orchards, the one is known Máhan Singh's garden and the other Dispensary garden. Like the District Board gardens the principal source of income here is on account of the sale proceeds of Malta oranges. The orchards are merely ornamental and bring no income.

The Municipal Committees of Wazírabad and Rámnagar also maintain one garden each and endeavours are being made to render them self-supporting.

The income and the expenditure of the several gardens is as follows :—

DISTRICT BOARD GARDENS.

	Income.	*Expenditure.*
	Rs.	Rs.
1890-91	894	2,181
1891-92	453	2,863
1892-93	378	2,841

GUJRANWALA MUNICIPALITY.

	Income.	*Expenditure.*
	Rs.	Rs.
1890-91	327	1,327
1891-92	617	1,472
1892-93	248	1,502

WAZIRABAD.

	Income.	*Expenditure.*
	Rs.	Rs.
1890-91	98	364
1891-92	131	435
1892-93	55	546

RAMNAGAR.

	Income.	*Expenditure.*
	Rs.	Rs.
1890-91	5	78
1891-92	46	80
1892-93	21	80

Establishment.—The establishment working at the gardens is as follows :—

DISTRICT BOARD.

Sadar Garden.

1 Máli ... ... at Rs. 12 per mensem.
1 Mate ... ... „ 5 „
10 Coolies ... ... „ 4-8 each.

Sessions House.

1 Máli ... ... at Rs. 3 per mensem.
2 Coolies ... ... „ 4-8 each.

GUJRANWALA.

Tahsíl Garden.

1 Máli ... ... at Rs. 6 per mensem.
1 Coolie ... ... „ 4 „

TAHSIL HAFIZABAD.

1 Máli ... ... at Rs. 7 per mensem.
1 Coolie ... ... „ 4 „

GUJRANWALA MUNICIPAL COMMMITEE.

2 Málís ... ... at Rs. 7 per mensem each.
2 Málís ... ... „ 5 „
4 Coolies ... ... „ 4 „

WAZIRABAD MUNICIPALITY.

2 Málís ... ... at Rs. 5 each.
2 Coolies ... ... „ 4 „

RAMNAGAR MUNICIPALITY.

1 Máli ... ... at Rs. 4 per mensem.

Income and expenditure.—The financial result of arboricultural operations is as follows:—

	Income.	*Expenditure.*
	Rs.	Rs.
1890-91	2,459	3,965
1891-92	1,931	4,055
1892-93	1,278	5,019

It will appear from the above figures that the District Board spends a large sum of money every year in arboriculture without any really satisfactory results. A carefully considered working plan will be adopted as soon as possible. The whole existing establishment requires overhauling and the supervision establishment expenditure will be saved by transferring the duties to the Public Works establishment which is about to be re-cast.

Private enterprise.—Private enterprise in the matter of arboriculture is very scarcely seen in this district except a few gardens which some of the wealthy land proprietors have laid out at some of the village sites more as a profitable investment than anything else.

GURGAON DISTRICT.

Nurseries.—During the three years under report the work done in the cultivation of young trees in the several nurseries has been fairly good. The following detail will show exactly the progress during the period under report:—

GURGAON.

The following additions were made:—

·97 acres were added to the Civil Station garden nursery.

·562 acres to the Gurgáon-Sohna road nursery, and

·004 to the Railway Station road nursery.

The following were transferred to groves:—

·051 acres from the Gurgaon Civil Station nursery, and

·006 acres from the Qutab road nursery.

REWARI.

Little or no change was made in this part of the district.

NUH.

A new nursery of ·125 acres was opened at Malab and another of ·0093 acres on the Nuh-Rewári road.

PALWAL.

·501 acres of the Delhi-Muthra road nurseries were transferred to groves.

FIROZEPUR.

A new nursery of ·005 acres was opened on the Bhadao-Firozpur road.

Plantations.—Very little progress has been made towards plantations although great exertions are made in sowing seeds in the different plain and hill plantations.

Little or no interest is taken by the local headmen of villages in supervising the various sowings, and in some instances cattle have destroyed parts of plantations. The following gives a rough idea of the work carried out during the three years under report. In some instances the soil and locality have proved unfit for the culture of any kind of trees.

Gurgáon.

70 acres were successfully planted in the Nathupur plantation, 42 acres were planted in the Inayatpur plantation, but of these 10 acres failed.

Rewári.

5 acres were planted in the Qutabpur plantation, but they all failed.

Groves.—A slight increase has been effected during the three years under report in the area of groves. The trees in groves on the Delhi-Muthra road have grown successfully and during the winter thinning will be required.

The following has been the work done during the period under report :—

Gurgáon.

The following additions were made :—

·061 acres to the Gurgáon Civil Station groves, and

·006 acres were planted on the Qutab road.

Palwal.

·501 acres were added to Delhi-Muthra road groves, miles 38 and 39.

Avenues.—The most important branch of arboriculture in the district is roadside tree-planting.

The progress made during the three years under report has been satisfactory.

Sohna-Taoru Road.

A length of five miles of trees was successfully planted on this road and the young plants were all established and show good growth.

Roads in Nuh Tahsíl.

A good deal of work has been done in the plantation of roadside trees in this tahsíl, but the rearing of young plants has been very unsuccessful. This may be attributed to the want of the local interest taken by the local bodies in that part of the district.

The following lengths planted but all failed :—

4·9 miles on the Nuh-Rewári road in 1891-92.

2·5 miles on the same road in 1892-93.

6·06 on the Bahora-Taoru road.

5·18 miles on the Palwal-Firozpur road.

Roads in Firozpur Tahsíl.

In 1891-92 2·9 miles of trees were added on the Firozpur-Alwar road, but they failed and again in the following year the same length was planted, but it was again unsuccessful.

An attempt to add 1·82 miles of trees on the Kotla Bund also failed.

Rewári Roads.

I see the operations in this part of the district have been successfully carried out. The following additions were successfully made in this tahsíl :—

2 miles of trees on Rewári-Narnaul road.

1 mile of trees on Rewári-Nuh road to Alwar border.

1 mile of trees on Rewári-Jhajjar road.

2 miles of trees on Rewári-Shah Jehanpur road.

2 miles of trees on Rewári-Kanaud road.

1 mile of trees on Rewári-Farrukhnagar road.

Throughout the district a good deal of work has been done to plant the gaps on several roads besides trying to improve the protection and culture of the trees planted during the last three years.

The advancement of hill plantations during the last three years has been satisfactory.

Statements VI and VII give details of income and expenditure during the last three years as follows :—

	Income.	*Expenditure.*
	Rs.	Rs.
1890-91	3,064	9,180
1891-92	3,540	9,134
1892-93	3,801	8,578
Total	10,405	26,892

From the above it will be seen that the arboricultural operations in the district are not paying as the expenditure Rs. 26,892 against receipts Rs. 10,405 shows a deficit of Rs. 16,487. Of course it was never intended that the sales, &c., should cover the cost of working expenses as most of the planting operations are for the benefit of roads, and another reason for the income being small is that in several localities it is difficult to get purchasers for windfalls and loppings.

The planting of date trees at Sohna has been most successful and some hundreds of trees have been distributed to the zamíndárs who are endeavouring to put them wherever the ground is available. A large number has also been planted on bunds throughout the district.

In conclusion I do not think it would be out of place to point out that the previous operations have entailed large expenditure without any satisfactory results. Large lengths of roads have been planted with young trees with an insufficient establishment to watch and take care of them. In most cases the planting out on roads has been stopped until the trees planted show favorable results. In fact, if a mile of road is taken every three or four years, better results are obtained than by a ruthless plantation of trees without proper supervision and care.

Great endeavours have been made to sow kikars along the road between Nuh and Firozpur. In some parts the seedlings have sprung up and this operation has been successful, but in other parts the seeds sown have met with failure on account of the cattle being allowed to graze on the side of the road as soon as the seedlings had sprung up after rains.

In some parts the sale of grass for grazing has been stopped on account of the destruction of young seedlings.

AMRITSAR DISTRICT.

General remarks regarding the season.—Return No. I shows that the rainfall in 1890-91 was equal to the average of past years, but in 1891-92 it was scanty, there was however a copious fall of rain in August 1892, and in January and February 1893. As far as arboricultural operations were concerned the rainfall was favorable.

Avenues.—The following statement shows the results of the three years' work :—

Year.	Length of roads fully stocked with trees at beginning of year.	Length of roads planted during the year.	Length of roads which have failed during the year.	Length of roads fully stocked with trees at end of the year.
1890-91	146·06	22·49	8·68	159·87
1891-92	159·87	9·83	8·35	161·35
1892-93	161·35	15·45	8·95	167·85

This shows that during the last three year 47·77 miles of road were planted, of these 21·79 miles succeeded, thus bringing the total length of roads stocked with trees at the end of 1892-93, up to 167·85 miles.

The Municipality has also made favorable progress in planting of roadside avenues, the failures were very small, out of 9·20 miles of road planted up, 9·01 miles have succeeded, making a total of 48·27 miles at the end of 1892-93.

Description of work done.—The tree-planting operations carried out on roadsides are given below—

Name of Road.	1890-91.			1891-92.			1892-93.		
	Planted.	Died.	Remaining.	Planted.	Died.	Remaining.	Planted.	Died.	Remaining.
Filling gaps on district roads	3,350	2,629	721	2,522	2,400	122	3,320	2,435	885
Rám Teerat Khasa road	1,040	130	910	...	...	...	...	...	...
Botári Railway Station road	185	5	180	...	...	...	...	...	...
Sher Singhwála road	200	6	194	...	...	...	...	...	...
Tarn Táran-Sirháli road	3,000	220	2,780	440	190	250	...	...	...
Siálkot road	...	...	...	450	210	240	200	20	180
Jandiála-Tarn Táran road	...	...	...	...	...	...	1,905	520	1,385
Total ...	7,775	2,990	4,785	3,412	2,800	612	5,425	2,975	2,450

The above also shows the extension of planting operations on:—

	Miles.
Rám Teerat-Khasa road	4·50
Botári Railway Station road	0·50
Sher Singhwála road	0·50
Tarn Táran Sirháli road	11·50
Siálkot road	0·25
Jandiala-Tarn Táran road	4·50

The number of trees planted by the Municipality on the different roads in the Station was:—

In 1890-91	2,122
In 1891-92	3,730
In 1892-93	1,262

Groves.—Groves have increased from 3·12 acres to 3·37 acres during the three years under report on which 650 kikar and shisham trees were planted.

Plantations.—The Municipality owns seven acres of plantation, which was omitted by an oversight from previous year's returns.

Nurseries.—In 1890-91 1,890 plants and in 1891-92 2,650 plants, total 4,540 were distributed to the villagers. Of these 260 were fruit trees, *viz.*, 110 mangoes and 150 jamans, the others were shisham trees.

No additions were made to Municipal nurseries.

Government Garden, Municipal.—About the middle of the first year of the period now reported on two public parks, the Nichols and Aitchison Parks, were laid out on lands reclaimed from the old city ditch.

Besides the well known Rámbágh gardens, there are now these two Parks outside and two large gardens inside the city.

Cattle Trespass and Lopping.—About 4,822 sheep and goats and 935 buffaloes, bullocks and cows were sent to be impounded under the Cattle Trespass Act for injuring trees on roadsides during the three years under report.

Fodder trees.—No remarks to offer under this head.

Financial.—The income from district arboriculture as detailed in Statement No. VI amounted to Rs. 6,105 or Rs. 169 more than in the previous triennial period. In addition to this, a large sum of income was credited at the close of 1892-93.

Compared with the triennial period ending 1889-90 there has been an increase in income from Municipal gardens and arboriculture as detailed in Statement VI of Rs. 5,416.

The expenditure for the three years under report amounted to Rs. 22,545, *vide* Statement VII, against Rs. 23,521 in the previous triennial period, or Rs. 976 less.

Up to 1890-91 all charges on account of formation of Municipal parks and gardens were debited to city ditch reclamation. Subsequent to that year these charges are debited to parks and gardens, hence increase in expenditure under the latter head.

DELHI DISTRICT.

Rainfall.—The rainfall of the triennial period is shown in Return No. I. It exceeded the average rainfall of past years by 4·32 inches and that of the previous triennial period by 1·50 inches. The summer rains of 1891-92 were particularly heavy. The summer rains of 1892-93 were late and below the average. The rainfall in the winter months of that year was nearly double the average rainfall in the winter months of past years. The winter rains of 1890-91 and 1891-92 fairly approached the average. On the whole the rainfall was not favourable to the seed-sowing operations which were carried out on a large scale during the triennial period under report.

Nurseries.—There were 7 nurseries at the close of the previous triennial period with an area of 2·24 acres. One of these in the compound of the Kutab Staging Bungalow is partly a nursery and partly an ornamental garden. Four nurseries were transferred to groves. A new nursery of ·20 acres was started at Farídabad, but it was subsequently given up and a fresh start was made in another plot of one acre which has been hired for the purpose for a period of eight years on Rs. 20 per annum. There were thus 4 nurseries at the close of the triennial period, *viz.*, (1) the Kutab nursery (2) the nursery at Farídabad (3) the Safdarjang nursery, and (4) the nursery on the Sonepat-Bahálgarh road. A nursery is needed on the Delhi-Najafgarh road and the matter is under the consideration of the District Board. The nurseries are in good condition, the irrigation being effected from wells. A máli and a bhishti are kept up at the Kutab nursery and ornamental garden, 2 málís at the Farídabad nursery, and a bhishti on the nursery on the Sonepat-Bahálgarh road. The nurseries were fairly well utilized. Nearly 1,115 plants were taken from the Safdarjang nursery and 1,300 plants from the nursery on the Sonepat-Bahálgarh road. 100 shisham plants were taken from the Kutab nursery in 1890-91. Imported date palm seeds were sown in it with good results. 61 date plants are now growing in it.

Plantations.—The following statement shows the operations carried out in plantations during the triennial period :—

	Area taken up for plantation at the beginning of the year.	Area successfully stocked at beginning of triennial period.	Area sown or planted during the triennial period.	Area failed during the triennial period.	Area stocked at close of triennial period.
Tiláuri rakh	915·00	561·00	150·00	130·00	581·00
Mehráuli plantation	17·00	17·00	...	...	17·00
Irrigation *bunds*	66·61	...	17·24	3·47	13·77
Bela plantation at Delhi	938·53	...	938·53	...	938·53
Plantation on the ridge	·20	...	·20	...	·20
Total	1937·34	578·00	1105·97	133·47	1550·50

Of the 150 acres shown as sown in the Tiláuri rakh, ·60 acres were sown with kikar seeds in 1890-91, 45 acres were planted with béd majnún (willow) plants in 1891-92, and 45 acres were sown with kikar seeds in 1892-93. The failures in 130 acres were caused by the floods of the river Jumna.

No seeds were sown in the Mehráuli plantation.

Of the 17·24 acres shown as sown on the irrigation bunds, 10·90 acres were stocked with trees at the close of the previous triennial period. The areas sown and failures during the three years under report were as follows :—

	Sown.	*Failed.*
1890-91	·36 acres.	·27 acres.
1891-92	2·65 „	1·97 „
1892-93	3·33 „	1·23 „
Total ...	6·34	3·47

Kikar seed was sown. Owing to the proximity of water these areas are peculiarly fitted for successful tree planting. The large failures are partly due to damage done by goats and cattle. Chaukídárs have been employed to look after the trees; but as each chaukídár is in charge of a group of bunds the protection is necessarily insufficient.

Groves.—Owing to the transfer of four nurseries to groves and inclusion of areas previously omitted, the area under groves has increased from 10·67 acres at the beginning of the triennial period to 14·61 acres at its close. No new groves were planted by the District Board.

The greater part of this area consists of groups of trees round police buildings. The following remarks are extracted from the report of the District Superintendent of Police on these groves:—

"Trees at police stations, road-posts, and rest-houses are classed under the head "groves." No new trees were planted during the past years, there being already more trees than wanted. On 1st April 1890 there were 5,401 trees on police lands. 600 failed during the past three years. 500 were made over to the Public Works Department on the abolition of certain road-posts on the Delhi-Karnál road. 4,301 balance alive on 1st April 1893 with the following detail:—

Alípur	47
Rái	311
Larsauli	321
Sonepat	79
Najafgarh	1,016
Nangloi	208
Mehráuli	89
Badarpur	318
Faridabad	299
Majháuli	900
Ballabgarh	100
Chhausa	593
Basant	20
Total	4,301

The trees principally planted are nim, siras, shisham, kikar, bakain, &c. Supervision is exercised by the officers in charge of police stations."

The expenditure of their maintenance amounted to Rs. 284 in 1890-91, Rs. 264 in 1891-92, and Rs. 108 in 1892-93. A further reduction of establishment is proposed by the District Superintendent of Police, as the trees have grown beyond the need of protection. The matter will be considered by the District Board. The sale-proceeds of trees, grass, &c., yielded an income of Rs. 17 in 1890-91, Rs. 33 in 1891-92 and Rs. 27 in 1892-93.

Avenues.—This is the most important branch of arboriculture in the district. The sanctioned plan of operations prepared in 1890-91 included the maintenance of existing avenues on the principal district roads and the sowing of kikar seeds on the other roads. The results of the operations carried out under this scheme are shown in the subjoined statement:—

	Lengths of roads suitable for avenues.	Lengths of roads stocked with trees at beginning of year.	Lengths of roads planted or sown during three years.	Lengths of roads which have failed during three years.	Lengths of roads stocked with trees at end of three years.
A. Fully planted with trees grown beyond need of watering or protection, four roads.	12·00	12·00	....	...	12·00
B. Partially planted with trees as above, young trees in gaps; six roads, including portions of four roads under class A.	19·03	10·80	8·29	·75	18·34
C. Partially planted with trees as above, young trees wanted in gaps, 41 roads.	289·00	50·50	160·84	93·87	117·47
D. Fully planted with young trees, two roads ...	5·66	3·00	1·22	50	3·72
E. No trees planted	7·43	...	3·56	3·50	·06
Total	333·12	76·30	173·91	98·62	151·59

There are thus 12 miles of district roads fully planted with trees grown beyond need of watering or protection. A number of trees however on the Delhi-Tatárpur road were recently destroyed by a storm and will have to be replaced by young trees in the next rains. There were 10·80 miles of roads partially planted with trees under class B at the beginning of the period under report. 7·54 miles were added to them during the triennial period as below:—

	Miles.
On Sadarjang-Humayun Tomb road	·14
On Tatárpur-Najafgarh road	3·12
On Sonepat-Bahálgarh road	·90
On Sonepat-Murthal road	1·07
Of the circular road in the Sonepat Municipality	2·31
Total	7·54

2·31 miles of the circular road at Sonepat had been omitted from the returns of the previous triennial period. The trees on these roads were partly transplanted from nurseries and partly raised by sowing seeds. Establishments for protecting and tending the trees are kept up on all these roads with the exception of one road and the avenues are in good and thriving condition.

Under class C. there are 41 roads with an aggregate of 289·00 miles. Málís and bhishtís are not employed on them. Trees are raised by sowing seeds and 11 chaukídárs on Rs. 6 per mensem each are kept up to look after the seedlings on some of them, each man being in charge of a group of roads. During the triennial period kikar seeds were sown on these roads in an aggregate of 160·84 miles, but failed in 93·87 miles owing to excessive rain, frost, hail-storms, and insufficient protection. 66·97 miles were thus added to the 50·50 miles which were stocked with trees and seedlings at the beginning of the triennial period. The 50·50 miles stocked with kikar trees at the beginning of the triennial period are in a thriving condition, but kikar seedlings (6 inches to 2 feet) have a very precarious existence until they become at least 5 feet high so as to be beyond the attacks of cattle, especially of goats.

Under class D. ·72 miles were added to the 3·00 miles of roads fully planted with young trees at the beginning of the triennial period. 500 mango trees were planted out on one of the roads included in the above figures with partial success.

Fodder Trees.—There are a large number of fodder trees such as pipal, bar, gular, &c., in the existing lines of trees on the Badarpur-Mehráuli and Safdarjang-Humayun Tomb roads. Kikar seeds are, as a rule, sown on all the bunds and village unmetalled roads.

Fruit Trees.—No fruit trees other than date palm were distributed to the zamíndárs. 500 mango trees were planted on one of the district roads with partial success. The sowings of the imported date palm seeds have been only partially successful. 400 date plants were reported to be growing in various places in 1889. According to the information collected in 1891, 147 plants were reported to have survived. Out of 100 date palm trees in the Kutab Staging Bungalow, there are now 61 trees from two to five feet high. Twenty-seven trees were distributed to zamíndárs, 2 planted on the Badarpur-Mehrauli road and 10 planted by the Secretary, District Board, in his garden near Delhi, but all of them failed owing probably more to want of proper care than to any other cause. The best results have been obtained at the Kutab Staging Bungalow nursery, where the trees are in a thriving state, though none of them came into flower this season.

Arboriculture by private individuals and communities.—The plots reported to have been planted in the previous triennial period are in good condition.

No rewards were paid during the period under report to private individuals.

Cattle Trespass.—Damage is done to young seedlings on roads and bunds by stray goats and cattle. They are sent to the pounds, when seized.

Porcupines also destroy a large number of young trees. This is especially the case at the Safdarjang nursery and on the Badarpur-Mehrauli road, the establishment of which has been provided with a gun for shooting them.

Lopping.—Trees on three roads were thinned in 1891-92 at a cost of Rs. 37. Pruning operations were carried out on 14 roads in 1892-93 at a cost of Rs. 375-8-0. The work was done in September and October in some cases by daily labour and in others by the málís and bhishtís employed on the roads. Care was taken to cut the branches hanging over the roadsides as well as those hanging over the fields. Hand saws were supplied to the men employed, but owing to the difficulty in handling saws in every case some branches of trees were lopped with hatchets also.

Financial results.—The financial results of arboricultural operations in the Delhi Municipality are detailed in the Municipal report. The results of operations in the district are exhibited below :—

	1890-91.	1891-92.	1892-93.
INCOME.	Rs.	Rs.	Rs.
District Funds	478	3,191	2,723
Sonepat Municipality	17	18	18
Total	495	3,209	2,741
EXPENDITURE.			
District Funds	3,778	4,665	4,934
Sonepat Municipality	162	1	137
Provincial for Serai Rohilla Khan cart enclosure	...	...	65
Total	3,940	4,788	5,136

The income of the Tiláuri rakh and the sale-proceeds of trees of bunds were not included in the statement of 1890-91. The increase in the expenditure is satisfactory.

Plan of operations.—Plan of operations for the next three years will be prepared by the Arboriculture Sub-Committee in accordance with the instructions contained in the Manual of Arboriculture, a translation of which in Urdú is very much wanted for use of the Local Boards and the Arboriculture Sub-Committee.

Delhi Municipality.

The three Municipal gardens (the Queens, the Kudsia, and the Roshnára) may be classed under the head of "ornamental gardens" and the Municipal Bela plantation under the head "plantations."

The income and expenditure of the three gardens and the Bela plantation for the three years under report will be found detailed in the enclosed Statement A.

The very large income from the Roshnára garden during the year 1891-92 is due to the sale of old trees cut down with the object of opening up the garden and making more roads, &c., and this garden has been much improved during the past three years.

There is nothing of any importance to be noted about the Kudsiá and Queen's Gardens.

The very large increase of income from the Bela plantation during 1891-92, is due to the sale of trees in certain plots of land situated in mauza Chandrawál, which land was given to the inhabitants of mauza Timarpur in return for land taken up by the water works.

The decrease in the expenditure (*vide* Statement B.) on roadside trees is due to the large reductions in the number of málís and bhistís employed on roadside trees. The expenditure will be still further reduced in the near future as it is contemplated to water the trees from the standposts and water mains laid down in all bazárs of the city.

No groves and avenues were planted during the three years quoted above, but the fence of prickly pear mentioned in the last triennial report is improving on the ridge and the young trees planted within the area enclosed by the fence are growing up finely.

A.

Gardens and Plantations.

Year.	Head of income and expenditure.	Income.	Expenditure.
		Rs.	Rs.
1890-91	Roshnára garden	1,734	2,513
1891-92	Ditto	4,394	2,697
1892-93	Ditto	2,056	2,702
1890-91	Kudsia garden	1,250	2,061
1891-92	Ditto	2,344	2,053
1892-93	Ditto	1,352	2,681
1890-91	Queen's garden	1,333	3,606
1891-92	Ditto	2,317	3,363
1892-93	Ditto	1,558	3,646
1890-91	Bela plantation	5,420	944
1891-92	Ditto	6,610	873
1892-93	Ditto	3,452	621

B.

Roadside Trees.

1890-91	Roadside trees	410	1,287
1891-92	Ditto	471	1,521
1892-93	Ditto	270	1,608

Statement showing trees planted by private persons in the Delhi district during the three years, 1890-91, 1891-92 *and* 1892-93.

No.	Name of zail.	Name of person who planted trees, &c.	Area.	Place where area has been planted.	Remarks.
1	Baráuli ...	Lachman Dás, Byrági ...	Grove in 15 bighás.	On the Chandaoli-Fattehpur-Beloch road in village Sihi.	Twelve trees of pípal and ním are standing 6 feet high.
2	Fattehpur Taga.	Mughlu, Zordar, Káley Khan, sons of Wazír of Fattehpur Taga.	Garden in 8 pacca bighás.	In village Fattehpur Taga.	
3	Do. ...	Buland Khan and Muhammad Bakhsh, sons of Dáúd Khan, Wazír and Shádi Khan, sons of Chotey of Fattehpur Taga.	Garden in 2 bighás.	Ditto.	
4	Do. ..	Thandi Meo, caste Taga ...	Garden in 3 bighás.	Ditto.	
5	Farídabad	Sheikh Abdul Ghani, Ráis, Farídabad.	Garden in 4 pacca bighás.	On north branch Farídabad Road in Farídabad.	The young trees are about 3 feet high.
6	Narela...	Rám Pershád, son of Kishan Lál, Bania of Narela.	Garden in 14 kachcha bighás.	In village Narela ...	Fruit trees, *viz.*, mangoes guavas, oranges, &c., planted. They are about 4 feet high.
7	Narela...	Udey Rám, son of Sawái Rám, Ját of Narela.	Garden in 6 kacha bigbás.	Ditto ..	Jaman, lemon, pomegranates, guavas, &c. trees planted. Garden is in a flourshing condition.
8	Bádli	Budha, son of Síta Rám, Ahír of Haidarpur.	Garded in 4 bighás.	In village Haidarpur	Mangoes, jaman, pears and guava trees planted.
9	Do. ...	Loom, son of Jia Rám, Ahir of Haidarpur.	Garden in 2 bighás.	Ditto ...	Ditto.
10	Do. ...	Rám Dhan, son of Jiwan, Ahír of Haidarpur.	Garden in 1 bigha and 10 biswas.	In village Haidarpur	Ditto.
11	Pálam ...	Bhullar Mal, son of Sálag Rám, Mahájan of Pálam.	Ditto ...	Near village Pálam...	Mangoe, jaman, khírni pípal and ním trees planted.
12	Kadípur ...	Sohan Lál, son of Amar Singh, Bania of Bakhtáwarpur.	Garden in 15 bighás, kacha	In village Bakhtáwarpur.	Mangoes, jaman and pear trees planted.
13	Do. ...	Ajudhia Parshád, son of Debi Sahái, Brahman of Burári.	Garden in 20 kacha bighás.	In village Burári ...	Guava and pomegranate trees planted and are about 5 feet high.
14	Karála ...	Udmi, son of Harsahái of Karala.	Garden in 15 kacha bighás.	Near village Karála...	Pear, guavas, jaman, shisham, mangoes, plantain, and lemon trees planted.
15	Do. ...	Udmi, son of Parem Sukh of Karála.	Garden in 12 kacha bighás.	Ditto ...	Pear, guavas, jaman, shisham, mangoes, plantain lemon and nim trees planted.
16	Do. ...	Baqllu, son of Guláb of Put Khurd.	Garden in 4 kacha bighás.	In village Put Khurd	Ditto.
17	Do. ...	Sukhchain of Put Khurd...	Garden in 7 kacha bighás.	Ditto ...	Ditto.
18	Do ...	Nawal, son of Harkaran of Put Khurd.	Garden in 4 bighás, 10 biswás, kacha.	Ditto ...	Jaman, shisham, pear, guava and mangoe trees planted.
19	Do. ...	Dilsukh of Jat Khor ...	Garden in 9 bighás, kacha.	Jat Khor ...	Jaman, shisham, pear, guava, mangoe, lemon and plantain trees planted.
20	Do. ...	Phulu of Jat Khor ...	Garden in 4 kachcha bighás.	In village Jat Khor...	Ditto.
21	Kanjhasla	Arjan Singh, son of Jumna Dás, Jat of Rasúlpur.	Garden in 1 bigha, 15 biswas.	In village Rasúlpur...	Jaman, pear, kikar and pipal trees planted.

JULLUNDUR DISTRICT.

Rainfall.—The rainfall during the three years under report was :—

1890-91 ...	...	...	...	...	...	...	23·69
1891-92 ...	...	...	...	...	...	...	11·60
1892-93 ...	...	...	...	...	...	...	34·10

It will be observed that the average of the past years since the registration began was 28·03 (*vide* return), but of the previous five years it comes to 21·88. Of the period under report the fall in 1891-92 was much below the average; there was an utter failure of rain in the winter months, the fall in September was also very poor. In consequence of there being no copious fall of rain during the past five years but one, water in the wells has gone down very low and nearly all the tanks and lowlying grounds have run dry and many large trees, specially mangoes round about Jullundur have dried up. The last year's fall was above the average, but it requires two or three more successive good seasons to raise the water level of the wells.

Nurseries.—Compared with the previous years the area under nurseries has been increased by ·85 acres, which is due to the conversion of a grove at Nakodar into a nursery.

The nurseries are 17 in number three in Jullundur, three in Nakodar, five in Phillour, and six in Nawashahr tahsil and are sufficient for the requirements of the district. 5,425 young trees were given from these to zamindárs, and the Executive Engineer Provincial Division, free of cost, and 5,495 to the Cantonment authorities and others who are not agriculturists at a nominal price of 100 plants for a rupee, besides of course those planted on roadsides in the district.

Plantations.—These are 14 in number on the banks of the river Sutlej having a total area of 164 acres stocked with trees. At the end of 1889-90 the number was 17 with an area of 159·68 acres which shows a decrease of 3 in the number of plantations, while in the area there is an increase of 4·32 acres. The decrease in number is on account of the areas of three plantations having been washed away by the river, while the increase in area is due to extension of plantations. These plantations are generally on lowlying ground reclaimed from the river and are therefore subject to inundation. Of 43·42 acres shown in column 4 of the statement as having been sown or planted 10·67 acres are due to correction of area by Land Revenue Settlement, and 32·75 acres were brought under plantation during the triennial period under report.

Shisham or kikar is generally sown in these plantations and these are planted with the object of producing a timber crop.

Groves.—The number of groves at the end of the last report was 6 with an area of 4·79 acres, one was added in 1891-92 and two having an area of 2·50 acres were sold in 1891-92 and one with an area of 85 acres was converted into a nursery during 1892-93.

The group of trees in the District kacheri compound where young trees have also been planted last year by the Municipality has been added, thus making the number of groves at the end of 1892-93 to be 5 with an area of 5·31 acres.

Avenues.—The work was chiefly confined to the following new lines of roads :—

(1). *Adampur* viá *Alawalpur to Kartárpur* (*Jullundur Tahsil.*)

This road is 13 miles long. 7·50 miles were planted previously and 2·25 miles during the period under report, making a total of 9·75 miles, leaving 3·25 miles to be planted which will be done in the current year.

(2). *Jullundur to Nurmahal* viá *Jamshere, 16 miles long.*

13·25 miles were planted in the previous year and 2·75 during the year 1890-91, thus completing this work.

(3). *Nakodar to Sidhwan ferry* viá *Mahatpur.*

This road, which is 11 miles in length, is also completed, 8 miles were previously planted and 2·50 during the years under report leaving half mile, the portion near the river unfinished as this is liable to inundation it has therefore been left out.

(4). *Bárapind to Rurka* viá *Goráya.*

Goráya is a station on the North-Western Railway opened a few years ago. A road was constructed as an approach from the 2 large villages of Bárapind to Rurka on the south-west of the station and is 7 miles long, 4 miles of which have been planted during 1891-92 and 1892-93 and the work is in progress.

(5). *Phagwára and Nawashahr road.*

This is an old road on which trees were planted in previous years, but there was a gap of 2 miles which was filled up in 1891-92.

(6). *Bangah to Garhshankar.*

This road was also completed, 3 miles were previously planted and 3 miles during 1892-93.

(7). *Road to Nakodar Rest-house*, 28 miles in length was planted in 1891-92.

It will thus be seen that the road avenues in this district during the three years under review have been increased by 16·78 miles.

Besides the above new work gaps and blanks have been filled up in all the metalled roads of the district as well as in the principal kacha roads.

Earth protected (*gamlas*) are generally provided wherever a young tree is planted and in sandy places cactus hedge is put up.

During the last triennial period 28,673 trees were planted on the roadsides by the agency of the District Board and Municipal Committees of which 2·940 have died or about 10 per cent.

Government Gardens.—The following are the only gardens in this district maintained by local bodies :—

(1). *The Empress or Town Hall gardens at Jullundur.*

It is maintained in equal shares by the Municipal and District Boards and it covers an area of 10 acres and is the only place of public resort by the people of the town, it is kept up more as an ornamentation than a source of income. A part of it is laid out with grass and in the remainder fruit trees, chiefly Malta and country oranges and grafted mangoes have been planted. Last year the income from the sale of grass amounted to Rs. 63, while the income from sale of fruit was comparatively less as in consequence of very little rainfall in 1891-92 the trees did not bear much fruit the proceeds being Rs. 112 and Rs. 14 during 1891-92 and 1892-93 respectively. This year however as the rainfall was so good the trees have borne much fruit and a larger income is expected.

The total income derived from the gardens is shown in Statement VI.

(2). *The Naráin or Jullundur Tahsíl garden.*

Is a small garden round the tahsíl and is also maintained by both District and Municipal Committees.

(3). *The Nawashahr Báradári garden.*

Is an old garden and contains many full grown mango trees, its income is therefore more than the expenditure. Last year the receipts and charges were Rs. 318 and Rs. 225, respectively.

(4). *Phillour Municipal Committee garden.*

This small graden was established only a few years ago and is on lease, it contains very few fruit trees, vegetables are chiefly sown in it.

(5). *Nakodar Municipal garden.*

This is a small strip of land converted into a garden on the side of the Malsián road at Nakodar. A few fruit trees have lately been planted there and it is let out on lease from the current year.

Cattle Trespass and Lopping.—As I have said before earth protectors are provided for young trees and gangs of coolies are employed in each tahsíl for the purpose of planting, watering and looking after the trees, and cattle found injuring roadsides trees or grazing on the grass are impounded and suits for damages are also instituted.

During the period under report 908 cattle were impounded and 28 suits instituted, nevertheless damages to trees by shepherds and villages is constantly done.

Lopping is done every year in the cold weather. Rs. 686 were realized during the period under report after paying the expenses of extra coolies employed under the jamadárs for this purpose.

Financial results.—The following statement shows the income and expenditure under different heads during the period under report :—

Head.	Income.				Expenditure.				Surplus.	Deficit.
	1890-91.	1891-92.	1892-93.	Total.	1890-91.	1891-92.	1892-93.	Total.		
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Gardens	443	1,099	706	2,248	2,866	3,079	2,875	8,820	...	5,972
Nurseries	304	40	265	609	1,201	1,262	1,319	3,782	...	3,173
Plantations... ...	911	...	3,869	4,780	53	108	41	202	4,578	...
Groves and avenues	6,298	6,160	5,951	18,409	6,156	5,554	4,716	16,436	1,973	...
Miscellaneous ...	20	14	...	34	..	...	...	...	34	...
Total ...	7,976	7,313	10,791	26,080	10,276	10,013	8,951	29,240	...	3,160

From the above figures it will be seen that if the arboriculture as a whole be taken for the district there has been a deficit of Rs. 3,160 during the last three years or a little more than Rs. 1,000 a year and individually the gardens and nurseries show a deficit, while under plantations and avenues there was a surplus. Gardens are not generally paying concerns, the larger income during 1891-92 is due to the sale of very old trees of the Nawashahr Baradári garden for Rs. 512. The expenditure is about the same in each of the past three years.

The income shown under nurseries is the sale-proceeds of fruit and vegetables from the nursery at Jullundur a part of which is reserved for the purposes of the nursery and the remainder planted with fruit trees and sown with vegetables. Rs. 40 shown as income of 1891-92 is a mistake. An item of Rs. 293 was erroneously omitted and included under groves and avenues if this be added the income of the year would be Rs. 333.

There is very little variation in the expenditure under this head.

The larger income in 1892-93 under plantations as compared with the previous years is owing to the sale of timber of 4 plantations for Rs. 3,598. The expenditure represents the amount spent in sowing seeds in the plantations.

There is no marked difference in the income from avenues (there being no income from groves). In consequence of good rainfall during 1892-93 extra Bhisties for longer periods for watering trees were not entertained hence the decrease in expenditure in that year compared with the two previous ones.

Work done by private agency.—The people of this district I am given to understand are not particularly desirous of planting trees or laying out gardens as the land cultivation yields more income than gardens. As an instance I may mention that there was a fine tope of shisham trees on the road from Jullundur city to the Cantonments, the landlord has only lately cut down every tree from this tope with a view to bring the land under cultivation. Similarly many fruit trees such as mangoes have been cut down from the gardens round Jullundur, some of the trees no doubt were dried up in consequence of scarcity of rain; but as no new trees were planted in their place it shows the people do not care much for gardens.

Cultivation of fruit trees.—The principal fruit tree in this district is the mango as the soil of Jullundur is very favorable to its culture. Ber (plum), mulberry, fig, jaman, pomegranates and oranges are also grown.

Fruit trees are sold in the public gardens at Jullundur at fixed prices, except this there is no other arrangement for their distribution among villagers.

24 off-sets of the Egyptian date palm were received in 1891 through the Director of Land Records and planted in the public gardens at Jullundur, half of the number has died and the remainder though living are not in a flourishing condition as the climate of this place is not suitable to them.

LUDHIANA DISTRICT.

Rainfall.—The remarkable feature in this statement is the abnormal and excessive rainfall in the year 1892-93, which was 55·15 as compared with 29·20 in 1887-88, the heaviest annual fall in the previous three years.

If special progress in arboriculture was not made in this year it must be remembered that the mortality from fever and cholera was terribly severe. In 1891-92 the rainfall was only 16·12 as compared with 21·57 in 1889-90, the lowest annual rainfall in the preceding triennial period.

Nurseries.—The area under "nurseries" in 1889-90 was 5·48.

In 1892-93 it is 5·41.

These figures show no progress and in intervening years the area sunk to 4·31.

The two nurseries at the Sadr have been exhausted and the area has now been utilized for other purposes.

A nursery was started in the period under report on the road from the Sadr to Lalton. The Samrála nursery has also been given up.

The areas of the Sadr nurseries are shown in this report as they were existing nurseries in 1892. Areas for Sadr nurseries have however been allotted under the new scheme of which particulars will be found in the column of remarks. As this scheme was started in February and the present report embraces the succeeding months up to 1st April it is not out of place to refer to it here, but it would cause great confusion to introduce it generally in the report so I have thought it better to quote existing figures, establishments, &c., up to February 1893, and to give a sketch of the new arrangements in the Appendix.

Young fruit trees and saplings continue to be supplied gratis to those who require them among the zamíndárs. Trees are occasionally applied for to plant round wells, &c., and they can be had for the asking.

Plantations.—There are no plantations as defined in this district, but under the new scheme the grove known as the Ludhiána rakh will be partially treated as a plantation but not wholly so and I therefore do not consider it desirable to alter the classification of that wood.

Groves.—The Sadr rakh area was transferred to "groves" *vide* previous report, with a plot at Bhattián, the area transferred amounting to 206·25 acres.

There has been no subsequent addition to the area under "groves."

Avenues.—The operations in 1890-91 and 1891-92 were confined to replacing dead trees on the roadsides. In 1892-93 4 miles of road were planted with single lines of trees on each side, and gaps were also filled up, for particulars *see* Statement No. V.

The activity displayed does not compare well with the previous triennial period possibly owing to the very discouraging remarks on this head in the last report.

I fear however that much cannot be done in the immediate future owing to the fact that the annual budget provision is totally insufficient to keep up one-half of the existing metal roads, and it is more important that the roads should be maintained than the trees on each side of them.

At the same time I may state here that I entirely disagree with the opinion expressed in former report as to the inutility of roadside trees.

I cannot regard them as "fever traps" or as "harbours of pestilential insects," and my opinion is that they are appreciated by way-farers though the latter may not wish to contribute towards their support. If I am not wrong in the belief that roadside trees are a real boon to way-farers, then it is the obvious duty of those who have the control of the public funds to spend them in a manner conducive to their comfort and convenience.

Income.—Ornamental Gardens—In 1887-88 an income of Rs. 482-11 was realized from the sale of produce of the Bassián garden and Ludhiána rakh of which Rs. 303 was on account of loppings, &c., from the rakh.

1888-89 shows only Rs. 95-8 from the Bassián garden.

1889-90 only Rs. 75 from the same source.

The income under this head by Statement VI is as follows:—

	Rs.
1890-91	264
1891-92	2,160
1892-93	992

This is all wrong. Ludhiána rakh had been included under "groves" *vide* previous report, but the items Rs. 2,160 and Rs. 992 are derived chiefly and almost entirely from rakh lopping and fellings.

The actual income from gardens excluding the rakh are as follows:—

	Rs.
1890-91	453
1891-92	584
1892-93	564

The receipts from the rakh have been credited to the wrong head in accounts. I cannot alter the accounts for three years which could have no good result and cause endless trouble so I think it is sufficient to explain this in the report.

The gardens are now being managed under a new scheme.—*see* Appendix.

Nurseries.—The income under this head compares very favorably with the previous three years.

	Rs.
1887-88	234
1888-89	298
1889-90	95
1890-91	355
1891-92	520
1892-93	349

Groves.—The income for the three years under report compares favorably with that realized in preceding three years.

In 1887-88 the income was only Rs. 2,318, in 1889-90 Rs. 3,051. In the years under report it was as follows:—

	Rs.
1890-91	3,681
1891-92	3,308
1892-93	4,207

not counting miscellaneous.

Expenditure.—The following is a list of arboriculture establishment for the whole district for each year under report:—

For 1890-91.

2 Jamadárs	@	Rs.	7 =	14	From 1st April to 14th July 1890.
14 Málís	@	„	6 =	84	
87 Bhístís	@	„	4 =	348	
28 Beldárs	@	„	4 =	112	
1 Pair of bullocks	@	„	15 =	15	
2 Jamadárs	@	„	7 =	14	From 15th July to 11th August 1890.
12 Málís	@	„	6 =	72	
68 Bhístís	@	„	4 and 1 =	269	
3 Beldárs	@	„	4 =	12	
2 Jamadárs	@	„	7 =	14	From 12th August to 2nd September 1890.
12 Málís	@	„	6 =	72	
57 Bhístís	@	„	4 and 2 =	226	
3 Beldárs	@	„	4 =	12	
2 Jamadárs	@	„	7 =	14	From 3rd September to 30th November 1890.
13 Málís	@	„	6 =	78	
105 Bhístís	@	„	4 and 2 =	416	
3 Beldárs	@	„	4 =	12	
2 Jamadárs	@	„	7 =	14	From 1st December 1890 to 31st March 1891.
6 Málís	@	„	6 =	36	
44 Bhístís	@	„	4 and 2 =	174	
3 Beldárs	@	„	4 =	12	

For 1891-92.

2 Jamadárs	@	Rs.	7 =	14
6 Málís	@	„	6 =	36
44 Bhístís	@	„	4 and 2 =	174
3 Beldárs	@	„	4 =	12

For 1892-93.

2 Jamadárs	@	Rs.	7 =	14	From 1st April to 31st August 1892.
6 Málís	@	„	6 =	36	
44 Bhístís	@	„	4 and 2 =	174	
3 Beldárs	@	„	4 =	12	
2 Jamadárs	@	„	10 and 8 =	18	From 1st September 1892 to 31st March 1893.
4 Málís	@	„	6 =	24	
7 Málís	@	„	5 =	35	
55 Bhístís	@	„	4 =	220	
1 Pair of bullocks	@	„	12 =	12	

The following table shows the permanent establishment in the various gardens for the three years under report:—

For 1890-91.

ORNAMENTAL GARDEN.

		Rs.	Rs.
1 Gardener	@	20 =	20
1 Máli	@	10 =	10
6 Beldárs	@	5 =	30
6 Bhístís	@	4 =	24
5 Beldárs	@	4 =	20
1 Sweeper	@	4 =	4
1 Beldár	@	2 =	2

For 1891-92.

1 Gardener	@	10 =	10
1 Gardener	@	8 =	8
1 Beldár	@	5½ =	5½
4 Beldárs	@	5 =	20
3 Beldárs	@	4½ =	13½
5 Beldárs	@	4 =	20
6 Bhístís	@	4 =	24
1 Sweeper	@	4 =	4
1 Girdawar	@	6 =	6

For 1892-93.

1 Gardener	@	10 =	10
1 Gardener	@	8 =	8
1 Beldár	@	5½ =	5½
4 Beldárs	@	5 =	20
3 Beldárs	@	4½ =	13½
5 Beldárs	@	4 =	20
6 Bhístís	@	4 =	24
1 Sweeper	@	4 =	4
1 Girdawar	@	7 =	7

For 1890-91 to 1892-93.

BASSIAN GARDEN ESTABLISHMENT.

		Rs.	Rs.
1 Gardener	@	10 =	120
4 Beldárs	@ 4 and	16 =	192
1 Sweeper	@	4 =	48

TAHSIL GARDEN AT SAMRALA.

1 Gardener	@	7 =	84
1 Beldár	@	5 =	60
4 Beldárs	@ 4 =	16 =	192

TAHSIL GARDEN AT JAGRAON.

1 Máli	@	6 =	72
3 Beldárs	@ 4 =	12 =	144

Nurseries.—The following shows establishment on above for three years under report :—

For 1890-91.

		Rs.	Rs.
1 Máli...	@	7 =	7
2 Málís	@	6 =	12
2 Málís	@	4½ =	9
10 Málís	@	4 =	40

For 1891-92.

1 Máli	@	10 =	10
2 Málís	@	7 =	14
2 Málís	@	6 =	12
2 Beldárs	@	5 =	10
3 Beldárs	@	4½ =	13½
9 Beldárs	@	4 =	36

For 1892-93.

1 Máli	@	10 =	10
2 Málís	@	7 =	14
2 Málís	@	6 =	12
2 Beldárs	@	5 =	10
3 Beldárs	@	4½ =	13½
9 Beldárs	@	4 =	36

General remarks.—I propose to confine these remarks to the subject of gardens which have been thoroughly reorganized and establishment reduced and redistributed under the new scheme.

The Station garden, 4 acres 1 rood, irrigated has been set apart for the cultivation of fruit. Ornamental shrubs when moveable transferred to the flower garden in the rakh.

Establishment.

		Rs.	Rs.	
4 Beldárs	@ 5 =	240	per annum.	
2 Pairs of bullocks	@ =	184	„	
Manure and purchase of fruit trees	=	100	„	
Total		524		

The nursery by Kacheri is kept up as a vegetable garden, 1 acre 1 rood 27 poles.

Establishment.

		Rs.	Rs.	
1 Máli	@ 10 =	120	per annum.	
1 Beldár	@ 5 =	60	„	
1 Pair of bullocks	=	92	„	
Manure and seeds	=	100	„	
Total		372		

TAHSIL VEGETABLE GARDEN.

3 acres 3 roods of which 1 acre and 6 poles irrigated to be maintained a vegetable garden and nursery combined.

Establishment.

		Rs.	Rs.	
1 Máli	@ 10 =	120	per annum.	
4 Beldárs	@ 5 =	240	„	
1 Pair of bullocks	=	92	„	
Manure and seeds	=	100	„	
Total		522		

FLOWER GARDEN IN THE RAKH.

Establishment.

	Rs.	Rs.		
1 Máli	@ 15 =	180	per annum.	
3 Beldárs	@ 5 =	180	,,	
1 Mehtar	@ 4 =	48	,,	
2 Pairs of bullocks		184	,,	
Seeds and manure		100	,,	
Total		692		

THE RAKH.

under special management of Deputy Commissioner.

Establishment.

	Rs.	Rs.		
1 Forester	@ 7 =	84	per annum.	

Thinning and lopping carried out from time to time, also felling and planting cost of labour defrayed from sale of produce and balance credited to the rakh.

BASSIAN GARDEN.

Establishment.

	Rs.	Rs.	
1 Máli	@ 10 =	120	
4 Beldárs	@ 4 =	192	
1 Chaukidár	@ 5 =	60	
1 Sweeper	@ 4 =	48	
Total		420	

SANRÁLA GARDEN.

Establishment.

	Rs.	Rs.		
4 Beldárs	@ 5 =	240	per annum.	
1 Máli	@ 7 =	84	,,	
2 Pairs bullocks...		184	,,	
Manure and seeds		100	,,	
Total		608		

Jagráon Garden.

	Rs.	Rs.	
1 Máli	@ 6 =	72	
3 Beldárs	@ 5 =	180	
Seeds and manure		50	
Total		182	

These changes were all introduced in February 1893.

There can be no doubt that a substantial increase in income and a large saving in expenditure will be the result.

RAWALPINDI DISTRICT.

Rainfall.—It will be seen from Statement No. I that of the three years under report the year 1890-91 shows by far the heaviest rainfall, and that the following year was a conspicuously dry one. The average for the three years is 37·76 inches.

Nurseries.—The area set apart for nurseries is 21·76 acres, of which 11·21 acres were stocked by the District Board and 1·56 acres by Municipalities.

Plantations.—No afforestation operations are in progress in this district.

Groves.—The area set apart for groves in this district is 395·58 acres, of which 359·95 acres were stocked by the District Board and 20·29 acres by Municipalities.

No appreciable progress has been made under this head since the last triennial report.

Avenues.—There are 987·97 miles in this district suitable for avenues. Of this length 330·82 miles have been stocked by the District Board and 10·36 miles by Municipalities.

The former shows a falling off on the three years under report, while the latter exhibits a slight improvement.

General remarks.—The locust plague of 1891 did much damage to trees, old and young, throughout this district, and the subsequent long winter drought further retarded all arboricultural progress.

Large sums of money have annually been spent on arboriculture, but I have had to reduce this as the results did not justify such an amount. The chief difficulties are the damage done by cattle and transport-camels with troops, and the obstinate and persistent obstruction of zamíndárs where tree planting in any way interferes with light and sunshine on their lands.

The latter difficulty was prominently noticed by Captain Deane in his report for the three years 1887-90.

Gardens.—The six public gardens at Ráwalpindi, Chattar, Hassan Abdál, Fatteh Jhang, Pindigheb and Gujar Khan continue to be maintained for the propagation of fruit trees and flowers, and large supplies of young trees are annually distributed from nurseries to zamíndárs and others in the district. In addition to the Government nursery at Chattar the Board maintains a nursery at Cherrapáni, 10 miles from Murree.

The total income from all sources during the three years was:—

	Rs.	Rs.
District Board	9,634	
Municipalities	4,128	= 13,762

and the expenditure—

	Rs.	Rs.
District Board	5,931	
Municipalities	10,598	= 16,529

The falling off in income of the District Board for 1892-93 was due chiefly to a loss on the grass contract of the Park, and the decrease in expenditure for the same year to the abolition of tree planting establishment, *vide* para. 7.

GUJRAT DISTRICT.

Rainfall.—The rainfall of the triennial period under report was much in excess of that of the past. It was seasonable and beneficial.

Nurseries.—The area under nurseries at the end of the triennial year is more than that at end of 1889 despite the fact that a much larger area has been given up owing to the larger number of young trees planted on roadsides. The area, both under nurseries at the beginning of each of the three years under review and that added to it during the same period, exhibits an increase compared with the past three years.

Plantations.—The area planted in the last year, comprising triennial period, *viz.*, ·1 to *nil.* during the years 1887 to 1889, is satisfactory.

Groves.—No trees in nurseries were allowed to become too old for transplanting since the space allotted to nurseries is not large enough and cannot afford to be occupied as a grove.

Avenues.—Although the length of roads stocked with trees at the end of the triennial period under review is more than that of the preceding, which is also the case in regard to the length of roads during the same period, the length of roads with trees alive at the end of the years 1890 to 1892 would have been much more than that of the three preceding years had not destruction been caused to trees by zamíndárs by either making holes through them or stripping off their bark. This was found to be the cause in almost every case of a fallen or dried tree close to any land belonging to zamíndárs whose only object in destroying the tree was that its shade was injurious to crops.

Suitable punishment was meted out to those caught red-handed by the Deputy Commissioner and the lambardárs through whose negligence trees suffered most were fined.

Income.—There are increases from all heads of income from arboriculture, the greatest increase being under avenues which is not due entirely to the sale-proceeds of dead and fallen trees, the result of storms or otherwise, but also to the sale of such trees which have died and fallen down owing to the mischievous action of zamíndárs who so injure large or small trees on road-sides or anywhere where they are close to their fields that they are bound to dry up and fall during the first heavy storm.

The method adopted by the zamíndárs to do away with a tree the shade of which falls on their crops is to bore a hole vertically through or hew it round at the base just a little below the surface of the ground. This plan to injure a tree escaped detection and invariably ended in the desired result in consequence of which trees damaged during the preceding triennial period succumbed and were sold as so many dried and fallen trees.

It was during my tours that I discovered the cause of trees drying up and being blown down was not due to natural consequences but to the acts of the zamíndárs. Besides during the years 1887 to 1889 no special establishment was employed to look after arboriculture, and the zaildárs and lambardárs had thus an easy means of appropriating to their own use fallen trees.

All these malpractices have been stopped; a Darogha of trees has been appointed with the necessary establishment under him, and all cases connected with the destruction of trees are thoroughly enquired into. As a further check and to facilitate working arrangements all trees in the district are being numbered with permanent marks and every precaution has been taken to preserve the arboriculture of the district.

Expenditure.—The increase in expenditure under establishment is due to the entertainment of a Dárogah of trees with establishment under him. This was not the case before as in the preceding triennial period, the very three Jamádárs employed to look after trees were found to cut green trees, strip off the bark of others and sell them to their own advantage.

They knew nothing about trees and never took any trouble to promote arboriculture.

No private persons or village communities interested themselves in arboricultural operations or planted trees.

Much has been done during the period under report in the culture of fruit trees, and although Gujrát is not a fruit producing district, those fruit trees that take readily have been largely planted in the ornamental gardens of the District Board.

GURDASPUR DISTRICT.

Rainfall.—The rainfall received during the period under report was 111 inches, which, if distributed regularly over the three years, would give more than a full average for each year. While however 1890-91 was moist, the next year was abnormally dry, and 1892-93 as abnormally wet. The most important rain for trees is of course that received during the hot weather, and the months when growth is more especially going on. In this point too there were serious fluctuations. On the whole the rainfall must be considered as having been slightly less favourable than usual in this moist district.

Nurseries.—There are nurseries actually existing at the Government garden, the Sessions House garden, and the encamping ground at the Sadar: at Batála, Pathánkot and Shakargarh Tahsíl gardens; at Bidipur on the Batála road from Gurdáspur; at Paniár on the Dínanagar road, and at Jaura on the road to Kalanaur.

It is doubtful whether the entire area here shown as under nurseries is wholly given up for that purpose, as plots growing vegetables are included in places, but for the future this will be stopped, and the nursery grounds will be regularly sown in plots in successive years. If the areas are thus fully utilised they will I think be found sufficient. In some of the nurseries, especially that at the encamping ground Gurdáspur, and the Tahsíl garden, Batála, there are numbers of fine young plants; some of them indeed have been allowed to get too big for transplanting; but there are many others still available, mostly mango and shisham. The area now under nurseries is nearly the same as three years ago, the small difference being due to freeing ground by transplanting for roadside work. No area was transferred to groves.

The statement given opposite (on page 49) shows the expenditure on each nursery for the past three years. The charges of looking after the Sessions House garden nursery and that at Jaura seem to have been included in the Sessions garden and roadside arboriculture charges respectively:—

		Government garden.	Sessions House garden.	Encamping ground.	Tahsíl garden Batála.	Tahsíl garden Pathánkot.	Tahsíl garden Shakargarh.	Bidipur.	Paniár.	Jaura.	Total.	Remarks.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1892-93	Establishment	60	...	72	132	60	108	60	60	...	552	
	Contingencies	6	...	5	41	...	53	...	...	...	105	
	Total ...	66	...	77	173	60	161	60	60	...	657	
1891-92	Establishment	60	...	72	132	60	64	60	60	...	508	
	Contingencies	6	...	5	41	...	*253	...	...	...	305	* Including Rs. 200 for an iron water-course.
	Total ...	66	...	77	173	60	317	60	60	...	813	
1890-91	Establishment	60	...	72	132	60	60	60	...	...	444	
	Contingencies	6	...	5	41	...	50	...	...	...	102	
	Total ...	66	...	77	173	60	110	60	...	...	546	

The charges of Rs. 200 in 1891-92 for an iron pipe water-course for the Shakargar Tahsíl garden ought not to have been debited in full to nursery expenditure.

An effort will be made to keep expenditure under this head strictly to the end in view, *viz.*, the rearing of young trees for transplantation.

The following statement gives income from nurseries, but it is obvious here too that items are wrongly included. The matter will receive attention during the present year:—

		Government garden.	Sessions House garden.	Encamping ground garden.	Tahsíl garden Batála.	Tahsíl garden Pathánkot.	Tahsíl garden Shakargarh.	Bidipur.	Paniár.	Jaura.	Total.
		Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
1892-93	Plants	27 8 0	6 14 0	36 6 6	...	...	...	...	...	...	7 12 6
	Fruits	...	...	42 0 0	67 0 0	55 0 0	...	...	...	...	164 0 0
	Total ...	27 8 0	6 14 0	78 6 6	67 0 0	55 0 0	...	...	...	...	234 12 6
1891-92	Plants	4 12 0	...	3 6 0	...	...	...	...	...	...	2 0
	Fruits	...	...	8 0 0	81 0 0	34 0 0	...	...	...	...	123 0 0
	Total ...	4 12 0	...	11 6 0	81 0 0	34 0 0	...	...	...	...	131 2 0
1890-91	Plants	52 10 0	...	31 0 9	...	...	...	...	...	...	83 10 9
	Fruits	...	...	25 0 0	51 0 0	25 0 0	...	...	...	...	101 0 0
	Total ...	52 10 0	...	56 0 9	51 0 0	25 0 0	...	...	...	...	184 10 9

Plantations.—The area now given is 25·551 acres, and this appears substantially correct, though one or two alterations may have to be made :—

		A.	R.	P.
1.	Mango plantation, Katcheri compound	2	3	30
2.	Shisham plantation ditto No. 1	2	3	16
3.	Ditto ditto ditto No. 2	1	0	13
4.	Ditto Sessions House, No. 1	1	0	16
5.	Ditto ditto No. 2	1	3	22
6.	China mulberry plantation	1	0	4
7.	Ditto ditto leased to Messrs. Lister & Co.	9	0	2
8.	Shisham and mango plantation, Government garden	2	2	12
9.	Ditto ditto encamping ground	2	2	34
10.	Ditto ditto in Tahsíl Shakargarh garden.	0	1	20

The plantation in the Government garden is changing its character, as the shisham trees are gradually being taken out, and Bombay mangoes are coming on in their place; it is in fact an extension of the garden, though fairly enough called a plantation.

We have no statistics available to show when these plantations were made, and at what cost; but the mango plantation at the Katcheri now giving a fair return yearly, was started, if I remember rightly, by Colonel Fendall, Deputy Commissioner, in 1872. The mulberry plantation, which is much younger, represents the unsuccessful result of misdirected energy, as Messrs. Lister's efforts to grow silk-worms which were to be fed on these mulberry trees have collapsed. Several distinct attempts have been made in Gurdáspur District in sericulture extending over a period of at least thirty years, and their only permanent result seems to have been a lot of mulberry trees of various ages grown in different parts on the roads and in plantations. The mulberry is not good as a timber tree, nor is it long lived. On the Kalanaur road numbers have gone off in a remarkable way withering in the trunk and requiring to be removed to make way for better kinds. There is no doubt that mulberry trees in Gurdáspur have been cultivated mainly for the sake of feeding silk-worms, and if sericulture is finally considered unsuccessful here, there seems no good reason for mulberry plantations. The fruit obtained is very inferior.

Groves.—There was no alteration in the area during the period under report. Groves are for the most part over-grown trees left in disused nurseries, and the distinction between them and plantations is not always clear. The detail is given below :—

	A.	R.	P.
Shisham grove near new Dák Bungalow, Gurdáspur ...	2	1	10
Mango and jaman grove near Dínanagar Thána... ...	0	3	6
Shisham grove on Kalanaur road near Jaura	0	2	0
Jaman grove near Gakhowal, Batála tahsíl	0	2	0
Shisham grove near Sher Mehdi	0	2	6
Ditto ditto Doda	0	1	0
Total	4	3	22

Of these the first might perhaps be called a plantation. The second near Dínanagar has some fine trees which having been once thinned out in Mr. Coldstream's time have again required the same operation this year. The income from such groves if well managed, no doubt, in the end more than recoups the cost of their making.

Avenues.—I cannot regard the statistics given here with satisfaction, as enquiry shows that though a good deal of real work most necessary in kind has been done during the past year, it has been in the way of filling up gaps in old avenues and not in advancing new lengths of trees. The fact is, in a district like Gurdáspur, what with decay of trees, grown in the early days of our rule, and losses caused by storms, there are a great many gaps occurring on almost all roads yearly. This is not to be much lamented as it often saves the labour of cutting the tree; but replacements certainly ought to be systematic and *complete*, and this it would appear has not been done for a good many years past. Consequently on coming back to my old district where I served as an Assistant twenty years ago I have been much disappointed. A great deal of money has been spent, but the policy of the successive District Officers, has not been uniform and the consequence is that the work now to be done almost mainly for some time must be filling up old gaps. I state this not for the sake of criticising others, but to explain what otherwise would be hard to understand that our roadside avenue operations for the present will have to be "repairs" rather than "new works." As soon as ever I see my way through this, I will have a scheme for new work prepared, and will endeavour to arrange that it shall go on as part of the regular executive administration.

Fruit trees.—This seems the most convenient place to note about fruit trees, as will be seen lower down the mango on the roadside is a profitable source of income, and will become more so. In various parts of the district there are private gardens, and some legal gentlemen have made gardens at the Sadr. It may be said I think that there is a mild inclination shown in this direction by private persons; but land is too valuable generally to allow of indulgence in what is for the most part a luxury. Mango gardens in various parts notably near Dínanagar and Sujánpur are of great value.

I have had a note prepared as below showing the prices realized from sale of fruit trees from the district gardens, it seems encouraging in a small way :—

	Rs. a. p.	Rs. a. p.
1890-91.		
Mango	62 12 9	
Apricot	0 4 0	
Orange	20 10 0	
		83 10 9
1891-92.		
Mango	4 12 0	
Orange	3 6 0	
		8 2 0
1892-93.		
Orange	32 10 0	
Mango	27 8 0	
Sweet lime	3 12 6	
		63 14 6
Pomegranate	6 4 0	
Pear	0 6 0	
Guava	0 4 0	
		70 12 6
Total for three years		162 9 3

Lopping and Thinning.—Lieutenant Douglas, as Assistant Commissioner here, had some good work done in this way recently, but there is a lot more to be done, and it is a task that cannot easily be delegated to a native subordinate. I hope to have it managed in time. Some roads are really painful to see, if it is only for the waste of land caused to the zamíndárs whose fields border on the road. Much of the work ought to have been done years and years ago.

Fencing.—This of late has been very lamely done, with the traditional three green boughs stuck round the young plant attracting rather than repelling the voracious goat. The best fence here (if it is looked after) is the cactus. Mr. Coldstream seems to have used it with success, but after his time the thorny plant has been allowed to grow up, till, in a good many cases, I found it as big as the young tree which had ceased to need protection and which it was fighting for the moisture and nourishment of the soil.

Income.—The income during the three years under report has averaged Rs. 5,000 yearly. This is not bad, but it includes several hundred rupees for roadside grass. The tems shown as income from nurseries might perhaps be fitly put down to groves or plantations ; but this is of no great importance and will be seen to hereafter. The income from the ornamental gardens is I think fair. Special effort is being made to keep down expenditure and increase income under this head.

The income obtained from rearing mango trees deserves attention, it will no doubt if our present policy be persevered in be a very large item. There seems to have been some good work done long ago by some officer whose name is lost in planting mango avenues on the Pathánkot road and on a cross road near Dínanagar, and the trees now are in full bearing. Mr. Coldstream again, about 1885, revived this policy which has been prosecuted more or less since his time, and which I hope to carry out vigorously. Every year the number of fruit-bearing mango trees increases, and though, the harvest is a very variable quantity, there can be no doubt of the ultimate success, and great importance as a financial measure of such mango planting operations. The income derived during the past few years from leasing the produce of the mango trees has been as follows :—

	Rs.
1889-90	905
1890 91	235
1891-92	250
1892-93	850

For the coming year the auction sale has not been so favourable owing to bad crop ; but if we persevere in extending our mango avenues we shall be able to guard against bad crops in one part by good crops in another. Recent operations have secured young mango trees :—

(1) On the Tibri road.
(2) On the Thandi Sarak leading to Mán village.
(3) Batála station approach road.
(4) On several encamping grounds.

When the trees now coming on bear fruit fully they will probably yield an extra Rs. 1,000 annually.

Expenditure.—This averages about Rs. 7,500 a year or half as much again as the income. I do not think that if it were necessary, Rs. 2,500 a year would be too much to pay for the use and beauty of all the trees on the district roads ; but I am not satisfied that the necessity exists. I think we shall be able to find points on which greater economy can be exercised and greater results obtained for our money. There is a large establishment and some of its members are lazy.

Establishment.—The following statement gives detailed comparative cost of establishment for the three years under report:—

Comparative Statement of Establishment for three years.

GARDENS.

1890-91.		1891-92.		1892-93.	
Government and Sessions House gardens—	Rs.		Rs.		Rs.
3 Gardeners at Rs. 6 each ...	18	1 Head Gardener at ...	25	1 Head Gardener	10
10 Coolies „ 5 „ ...	50			2 Gardeners at Rs. 6 each ...	12
2 „ „ 4-8 „ ...	9			12 Coolies „ 5 „ ...	60
2 Sweepers „ 4 „ ...	8			2 „ „ 4-8 „ ...	9
				2 Sweepers „ 4 „ ...	8
	85	Rest as before	85		99
Annual cost ...	1,020		110	Annual cost ...	1,188
		Annual cost ...	1,320		
Dâk Bungalow, Gurdáspur—					
1 Gardener	6				
Annual cost ...	72	As before	72	Gurdáspur Dâk Bungalow ...	7
Danera Dâk Bungalow—					
1 Gardener	7				
1 Coolie at Rs. 5	5				
	12				
Annual cost ...	144	As before	144	Danera Dâk Bungalow ...	144
District Board Hall—					
1 Gardener	5				
Annual cost ...	60	As before	60	District Board Hall	6
Total ...	1,296	Total ...	1,596	Total ...	1,464

NURSERIES.

Government garden, 1 Gardner	5	As before	5	As before	5
Encamping ground „	6	„	6	„	6
Pathánkot Tahsíl „	5	„	5	„	5
Batála ... 1 at Rs. 6 }	11				
„ ... 1 „ „ 5 }		„	11	„	11
Shakargarh ... 1 „ „	5	„	5	„ ... ... 1 at Rs. 5 }	9
		1 for 1 month	½	„ ... ... 1 at „ 4 }	
Bidipur ... ... 1 „ „	5	As before	5	„	5
		Paniar	5	„	5
	37		42½		46
Annual cost ...	444	Annual cost ...	508	Annual cost ...	552

ROADSIDE AVENUES.

Gurdáspur Tahsíl—					
2 Jamadárs at Rs. 8 each ...	16	2 Jemadárs at Rs. 8 each ...	16	2 Jamadárs at Rs. 8 each ...	16
1 Jamadár	7	1 Jamadár	7	1 Jamadár	7
31 Bhístís at Rs. 5 each ...	155	30 Bhístís at Rs. 5 each ...	150	30 Bhístís at Rs. 5 each ...	150
	178		173		173
Annual cost ...	2,136	Annual cost ...	2,076	Annual cost ...	2,076
Batála.					
1 Jamadár	10	1 Jamadár	10	1 Jamadár	8
11 Bhístís	55	11 Bhístís at Rs. 5 each ...	55	11 Bhístís at Rs. 5 each ...	55
	65		65		63
Annual cost ...	780	Annual cost ...	780	Annual cost ...	756
Shakargarh.					
1 Jamadár	8	1 Jamadár	8	1 Jamadár	8
14 Bhístís	70	14 Bhístís at Rs. 5 each ...	70	14 Bhístís at Rs. 5 each ...	70
	78		78		78
Annual cost ...	936	Annual cost ...	936	Annual cost ...	936
Pathánkot.					
1 Jamadár	8	1 Jamadár	8	1 Jamadár	8
12 Bhístís	60	12 Bhístís	60	12 Bhístís at Rs. 5 each ...	60
	68		68		68
Annual cost ...	816	Annual cost ...	816	Annual cost ...	816
GRAND TOTAL ...	4,668	GRAND TOTAL ...	4,608	GRAND TOTAL ...	4,584

With regard to the Government garden it will be noticed that the expensive gardener on Rs. 25 has been got rid of in exchange for a more modest official on Rs. 10. The result of this economy gives us no cause for dissatisfaction in any way.

There is no other point that calls for special remark, but it may be noted that the jamadárs generally and a good many of the bhístís are on their trial, and unless they improve in work will be sent off to make way for better men.

Financial results.—These have been already briefly noted. A yearly expenditure of Rs. 7,500. A yearly income of Rs. 5,000, which may be hoped to increase to at least Rs. 6,000 before very long.

General remarks.—I trust that this report will not be thought too censorious. Mr. Burney twenty years ago and Mr. Coldstream about seven years ago did systematic and vigorous work in arboriculture. Had the same policy been continually and equably pursued for twenty years, we should have had splendid results by this time in this favoured district, yet as matters are there are fine avenues in many parts, and all that we can wish for is that our operations in the present and future may be on a par with the best traditions of the past.

AMBALA DISTRICT.

Rainfall.—The entries in this statement relate to the sadar Station only—*vide* foot note (*a*).

Nurseries.—There were no nurseries in the district at the close of 1889-90, an area of about 18·44 acres was brought under nurseries during 1890-91 and about 5·50 acres during 1891-92. The total area under nurseries at the close of 1892-93 was 23·94 acres.

Plantations.—The statement is blank.

Groves.—At the beginning of 1890-91 an area of 5·50 acres was under groves to which was added an area of 92·90 acres planted during the year, but 5·50 acres failed. In 1891-92 25 acres were planted and 5 acres failed. The total area under groves at the close of 1892-93 was 112·90 acres.

Avenues.—The length of Ambala-Kaithal and Jagádhri-Pehowa roads has been reduced by about 9 miles in each case during the last three years owing to the transfer of the Pehowa iláqa to Karnál district.

At the beginning of the year 1890-91 the length of roadway stocked with trees and established plants was 258·75 miles and at the end of 1892-93 it was 323·99 miles. The figures show an increase of 65·24 miles, due to the progress made during the last three years on different roads. The number of trees at the beginning of 1890-91 was 78,799. 12,000 trees were planted and 9,000 died or were cut down during the last three years. There were 81,799 trees remaining at the close of 1892-93.

Income.—The income under the different minor heads during the last three years was as follows:—

Year.	Ornamental gardens.	Nurseries.	Avenues.	Total.
	Rs.	Rs.	Rs.	Rs.
1890-91	224	...	13,063	13,287
1891-92	292	...	226	518
1892-93	444	...	13,179	13,623

Expenditure.—The expenditure on arboriculture during the last three years was Rs. 23,356 as detailed below:—

Year.	Ornamental, gardens.	Nurseries.	Avenues.	Total.
	Rs.	Rs.	Rs.	Rs.
1890-91	3,947	58	2,581	6,586
1891-92	2,661	120	3,789	6,570
1892-93	5,000	620	4,580	10,200

The figures for expenditure during 1890-91 and 1891-92 were almost equal; 1892-93 shows an increase of Rs. 3,630 over the expenditure incurred during 1891-92, which was due to the great improvement made with regard to the Station and the Morni gardens. Both of these gardens are now in a flourishing state.

The financial result of the Station garden is now improving under the supervision of the Secretary, District Board, who has been in entire charge of the garden.

There has been no peculiar event during the period under report affecting arboriculture.

SIALKOT DISTRICT.

The roads planted with avenues of trees on both sides have increased by 30 miles.

All arboricultural operations were for a period of three years placed under the District Engineer of the District Board. It was found that this was not a good plan, and from the beginning of 1892-93 the Tahsíldár of each tahsíl supervises the operations in his jurisdiction.

This works better, and I believe that we shall have by this means more trees planted, and those already planted better cared for. I hope to extend the plantation work a good deal during these rains and next spring. The nurseries had been neglected. They have now been concentrated in a few central positions, and have been divided off to allow of proper succession sowings.

Rainfall.—Statement No. I exhibiting the rainfall during the triennial period 1890-91 to 1892-93 has been prepared from the agricultural prospects reports. The rainfall of 1890-91 was abnormal; that of the following year was below the average, the winter rains especially being very scanty, but as the rains during the previous year were very copious, no harm was done. In 1892-93 the fall was much above the average and almost the whole of the winter rain fell during the months of January and February, impeding the work of transplanting a good deal. On the whole the rainfall during the past three years was favorable for arboricultural operations.

Nurseries.—There has been no decrease in the number of nurseries in the district, but the area has been reduced from 18·21 acres in 1889-90 to 8·02 acres at the close of 1892-93. During the three past years 6·17 acres were taken up for nurseries and 16·36 acres given up, almost the whole of the area given up has been transferred to groves.

The Begowála and Jesarwála private nurseries and the Dharmkot District Board nursery were closed as they were no longer needed. The Dhuasanda, Talwandi and Kuluwál nurseries were reduced in size.

On the other hand small nurseries were established on roads where arboricultural operations were going on.

The nurseries of forest and fruit trees in the District Fund gardens in Cantonments are maintained and continue to keep up a supply of plants for sale at moderate prices and for distribution in the district. Zamíndárs are allowed to purchase fruit trees at half prices.

Groves.—Statement No. IV exhibits the area occupied by groves. It has risen from 7·05 acres in 1889-90 to 13·15, the increase is due to the transfer of ground planted with timber and fruit trees at the disused nurseries mentioned in para. 3. The groves of mango trees at Dhamthal, Kuluwál and Dharmkot are thriving and will in a few years become remunerative. Most of the public buildings in the district have a few trees planted around them, but these are not groves and therefore have not been included in the return.

Avenues.—During the past three years there has been a net increase of 32 miles in the length of avenues successfully planted with trees on both sides of the road. In 1890-91 the Deputy Commissioner suggested to the District Board that those roads in the district that were from 80 to 100 feet wide, and little used, should be reduced in width, 40 feet in the centre being kept up as a roadway, trees being planted on both sides, when these inner lines are well grown the outer lines to be gradually removed or allowed to die out, on such roads gaps are not to be filled up for the future; this plan is a very good one and serves a double purpose, for whilst it relieves the fields on either side of injury by the shade cast on them the disused portion of road will supply earth for repairing the roads.

During the triennial period attention has been paid to the filling up of gaps in avenues on the narrower roads, but the chief work done has been planting of several miles of broad roads with inner lines of trees, and a good deal of this work has been successful. The roads so treated are the Amritsar, Gurdáspur, Kuluwál, Gujránwála, Gurdáspur to Lahore and Emenabad roads. All this work does not appear in the statements, but I have caused it to be shown on the map by means of red dotted lines along side the green line, the latter represents the old avenues and the former the new inner lines.

District Canal and Bands.—Besides the work done on roads a great deal of attention has been devoted to the stocking of bands and embankments of irrigation channels with fruit bearing and fodder trees. The Arki Canal has been planted with mangoes, mulberry and shisham. The outer side of the embankment around the great Satrah Chamb has been planted with similar trees. This work has been very successful, the trees have grown so rapidly that most of them need no further care.

Date palm.—In March 1889 a quantity of seeds of the Egyptian date palm was received from the Director of Land Records and Agriculture, when the seedlings were nearly two years old, several hundred were distributed in the district, most of which are alive and

thriving, especially those that were planted on the Arki Canal embankment, also about a hundred trees planted in the Cantonment gardens and on the fort plateau in the city. In September 1891 some offsets of imported varieties of dates were obtained and planted in the Cantonment gardens, most of these are well established and have produced three or four new fronds each. In the autumn of 1891 another supply of seed was received, and there are now about 1,800 fine healthy plants ready for distribution. There is little doubt that these plants, if taken care of, could be grown almost any where in this district with profit.

Robinia, Albizzia procera.—Experiments were made with some seed of the *Albizzia procera* and the *Robinia*, the seeds germinated well and the former has been grown very successfully, but of the latter only a few plants have survived, and these were preserved by keeping them in the green house; I am afraid that they are not suited for this climate, for they cannot stand either the heat or the cold, I will however give them another trial.

Sowing seed on roadsides.—An experiment was made of raising avenues on roadsides by sowing the seed of the *Acacia arabica* in trenches, but it was a failure, because the young plants were not sufficiently protected from traffic and perhaps they also suffered from drought during the autumn months. There is no reason why this system of raising avenues of "kikar" should not be a success if the seedlings are taken care of until they are well established. There is scarcely any tree that requires so little care as the *Acacia*, and though it is not of much use as a shade giving trees on roadsides it grows very quickly, is valuable and the wood is much sought after by the people of the district for making well gear, sugarcane presses, roofing burning into charcoal, &c.

Destruction of roadside trees by storms.—During the year 1890-91 great damage was I regret to say, done by severe storms and heavy rain followed by high wind. Thousands of trees were blown down and large gaps made in avenues, the income from the sale of trees alone amounted to over Rs. 30,000, and still a great deal of the wood remained unsold until the following year.

Income.—The income from arboriculture, which includes, receipts from sale of plants, fruits and vegetables from the ornamental gardens in Cantonments, the sale of roadside and grass, &c., is shown in Statement No. VI. The reason of the abnormal income during 1890-91 and the large receipts during the following year has been explained above.

Expenditure.—The expenditure on ornamental gardens, nurseries, groves and avenues is shown in Statement No. VII. The expenditure on ornamental gardens during the past three years was much reduced, whilst that on roadside avenues increased, but the aggregate outlay on arboriculture was less than that of the preceding triennial period:

Establishment.—The supervising establishment now consists of 5 Muharrirs (1 for each tahsíl), whose duty it is to look after the nurseries, superintend tree planting on roadsides and the annual lopping and pruning of trees and to dispose of fallen trees, &c. To each tahsíl a chaprási is attached who collects the proceeds of the sale of wood. During 1892-93 it was found necessary to place the supervision over the arboriculture in each tahsíl under the Tahsíldár, who has direct control over the establishment and submits his reports to and receives his orders and instructions from the Deputy Commissioner.

Financial results.—The following is a comparative statement of the income, expenditure and profits from arboriculture during the past two triennial periods:—

Year.	Income from gardens.	Income from sale of roadside trees and loppings, &c.	Total.	Expenditure on gardens.	Expenditure on arboriculture.	Total.	Surplus.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1887-88 to 1889-90	6,781	37,478	44,259	11,776	21,266	33,042	11,217
1890-91 to 1892-93	5,695	80,481	86,176	7,425	24,085	31,510	54,666

Work done by private persons and village communities.—Horticulture continues to receive much attention from private persons, plots varying from a few marlás to several acres in extent are being brought under fruit cultivation all over the district. The production of English vegetables, such as cabbages, cauliflowers, turnips and peas is increasing yearly. There are no extensive plantations of forest trees, as ground is too valuable for that, but, at almost every well in a village, there is a small plot devoted to the rearing of shisham, mulberry, kikar or bakain.

HOSHIARPUR DISTRICT.

Rainfall.—The rainfall during the three years under review is given below :—

1890-91	38·82
1891-92	18·21
1892-93	55·05

The rainfall during the year 1892-93 was 36·84 inches in excess of the previous year's rainfall. The year 1891-92 was exceptionally dry and unfavorable for arboricultural operations. The rains of 1892-93 were very copious and the season very favorable.

Nurseries.—The area added to nurseries during the three years under report was 1·96 acres, as detailed below :—

1890-91	1·68
1891-92	0·20
1892-93	0·08
Total	1·96

Of the area added to nurseries ·18 of an acre was planted on excamping-grounds and 1·78 acres on convenient spots near roadside.

Groves.—The area under groves at the beginning of the year 1890-91 was neither added to nor diminished during the three years under report. The 12 acres laid out and stocked during the year 1889-90 has done extremely well and the fruit trees obtained from Saháranpore and Lahore are in a flourishing condition. Fruit trees were supplied to Zamíndárs as usual at half price. There is a great demand among cultivators for Malda and Bombay mangoes and Cintra and Malta orange grafts, also for loquats and peaches. Aluchias, alubukhara and pears do not appear to be very much appreciated at present; but no doubt the demand for them will increase.

The following descriptions of fruit trees were obtained from Lahore during the period under report :—

Cintra oranges.
Kabul nectarines.
Black aluchias.
Yellow ditto
Alubukharas.
Country pommelos.

In addition to loquats and pears, Malda and Bombay mangoes' Cintra and Malta orange grafts can now be procured locally. The gardens so far have answered all demands for the supply of fruit trees in the district.

Avenues.—The length of roads planted during the three years 1890-91, 1891-92 and 1892-93 was 23 miles as detailed below :—

1890-91.

	Miles.
I.—Anandpur-Khiratpur road	5

1891-92.

II.—Hariána and Sham road	8
III.—Anandpur and Kiratpur road	0·50

1892-93.

IV.—Garhshanker-Nissarghát road	1·50
V.—Hariána Dhalbába road	8
Total	23·00

The extension of avenues on the abovenamed roads was carried out in accordance with the plan of arboricultural operations sanctioned for this district. The progress made is fairly satisfactory, though the energies of the establishment were mostly devoted towards maintaining plantings of previous years.

Thinning and clearing out avenues.—A considerable amount of work has been done in this direction, more especially in the Garhshanker tahsíl, the object being to remove all disfigured, stunted and inferior description of trees such as phulah, túl, beri, sarin, kikar, drek, &c., which experience shows do not conform to the conditions required of good avenue trees. The clearances effected have been satisfactory in the large sums which have been realized. Valuable trees such as mango and shisham are being planted in the place of those cut down and sold.

The total number of trees planted out during the three years under report was as detailed below :—

Mango	9,003
Jáman	733
Shisham	19,129
Tún	342
Eucalyptus	247
Bamboo	8
Pipal	11
Rajain	31
Total	29,504

sarin, tút, and bed trees, being inferior descriptions of trees and unsuitable for avenues were not planted out on roadsides.

Cattle trespass and lopping.—The sum of Rs. 74 was expended in fencing young trees planted on roadsides in order to protect them from damage by cattle and goats. Some damage was done to young trees by cattle and goats on the Hájipur-Dasuah and Hoshiárpur-Tanda roads, but the trees injured were replaced. Cattle found injuring roadside trees are impounded.

The sum of Rs. 239 was realized from sales of loppings of roadside trees. The instrument used for the purpose is a hand-saw and lopping is confined strictly to branches impeding traffic.

Experimental cultivation.—Some date-palm seeds were supplied by the Director of land Records and Agriculture, Punjab, in September 1889. These were distributed to the four tahsíls and also sown in the Station gardens. The following seeds germinated :—

	Khadráni.	Sowrán.	Zahidi.	Halavi.
Tahsil Hoshiar	17	9	12	3
„ Dasuah	7	3	31	16
„ Una	16	15	9	4
Station gardens	19	25	17	18

Tahsíl Garhshankar.—The different varieties were all sown together and 40 plants germinated.

The plants were distributed gratis to agriculturists likely to take an interest in the matter and some were retained in the Station and Tahsíl gardens. Those in the Station gardens are now from 4 to 5 feet high. On the whole the experiment succeeded fairly and the soil of the district, except in the hilly portions, appears to be suitable for their culture.

Twenty offsets and 15 sérs of seed were also supplied by the Director of Land Records and Agriculture, Punjab, in February 1891. These have been distributed, but the result of the experiment will only be known in September next, *i. e.*, after the rains.

Establishment.—The following establishment was employed on maintenance of existing trees and nurseries, and plantation of new avenues and nurseries during the past three years under report :—

1890-91.

	Rs.	a.	p.		
1 Jemadár @ Rs. 10 0 0 =	10	0	0	per mensem.	
1 „ @ „ 7 8 0 =	7	8	0	„ „	
1 „ @ „ 7 0 0 =	7	0	0	„ „	From April 1890 to 30th September 1890.
1 „ @ „ 8 0 0 =	8	0	0	„ „	From October 1890 to 31st March 1891.
1 „ @ „ 7 0 0 =	7	0	0	„ „	Ditto ditto.
1 Máli @ „ 6 0 0 =	6	0	0	„ „	
7 Málís @ „ 5 0 0 =	35	0	0	„ „	
1 Máli @ „ 5 0 0 =	5	0	0	„ „	From April 1890 to September 1890.
2 Málís @ „ 4 8 0 =	9	0	0	„ „	
93 „ @ „ 4 0 0 =	372	0	0	„ „	
60 „ @ „ 4 0 0 =	240	0	0	„ „	From April 1890 to July 1890.
19 „ @ „ 4 0 0 =	76	0	0	„ „	From 1st to 31st August 1890.
1 Máli @ „ 3 0 0 =	3	0	0	„ „	
1 „ @ „ 1 0 0 =	1	0	0	„ „	

1891-92.

				Rs.	a.	p.		
1	Jemadár	@ Rs.	10	0	0 =	10	0	0 per mensem.
1	„	@ „	8	0	0 =	8	0	0 „ „
1	„	@ „	7	8	0 =	7	8	0 „ „
1	„	@ „	7	0	0 =	7	0	0 „ „
1	Máli	@ „	6	0	0 =	6	0	0 „ „
7	Málís	@ „	5	0	0 =	35	0	0 „ „
2	„	@ „	4	8	0 =	9	0	0 „ „
94	„	@ „	4	0	0 =	376	0	0 „ „
50	„	@ „	4	0	0 =	200	0	0 „ „ From June 1891 to August 1891.
8	„	@ „	4	0	0 =	32	0	0 „ „ From 1st to 31st August 1891.
1	Máli	@ „	1	0	0 =	1	0	0 „ „

1892-93.

1	Jemadár	@ Rs.	10	0	0 =	10	0	0 per mensem.
1	„	@ „	8	0	0 =	8	0	0 „ „
1	„	@ „	7	8	0 =	7	8	0 „ „
1	„	@ „	7	0	0 =	7	0	0 „ „
1	Máli	@ „	6	0	0 =	6	0	0 „ „
7	Málís	@ „	5	0	0 =	35	0	0 „ „
2	„	@ „	4	8	0 =	9	0	0 „ „
94	„	@ „	4	0	0 =	376	0	0 „ „
2	„	@ „	4	0	0 =	8	0	0 „ „ From September 1892 to March 1893.
68	„	@ „	4	0	0 =	272	0	0 „ „ From May 1892 to August 1892.
20	„	@ „	4	0	0 =	80	0	0 „ „ From 1st to 31st August 1892.
1	Máli	@ „	1	0	0 =	1	0	0 „ „

The establishment for gardens was as follows :—

1890-91.

2	Gardeners	@ Rs.	7	= 14	per mensem.
9	„	@ „	5	= 45	„ „
1	Gardener	@ „	3	= 3	„ „

1891-92.

The same as above—

1892-93.

1	Gardener	@ Rs.	8	= 8	per mensem.	April 1892 to March 1893.
1	„	@ „	7	= 7	„ „	
10	Gardeners	@ „	5	= 50	„ „	

The establishment for nurseries was as follows :—

1890-91.

1	Gardener	@ Rs.	5	= 5	per mensem.	From October 1890 to March 1891.
2	Gardeners	@ „	4	= 8	„ „	
2	„	@ „	4	= 8	„ „	From June 1890 to March 1891.
1	Gardener	@ „	4	= 4	„ „	From 1st April 1890 to 31st May 1890.
2	Gardeners	@ „	3	= 6	„ „	From 1st April 1890 to 30th September 1890.
1	Gardener	@ „	3	= 3	„ „	

1891-92.

1	Gardener	@ Rs.	5	= 5	per mensem.
4	Gardeners	@ „	4	= 16	„ „
1	Gardener	@ „	3	= 3	„ „

1892-93.

The same as above.

The establishment was supervised by Tahsíldárs and Presidents of Local Boards.

VII.—*Financial results.*

1890-91.

Income.	Hoshiárpur	Dasuah	Garhshankar.	Una.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.
By sale of trees and dried timber	1,115	1,467	2,419	1,557	6,558
Grass	7	3	...	40	50
Kharkana	2	34	257	...	293
Lakh	50	120	332	337	839
Fruits	44	46	27	...	117
Miscellaneous	...	2	...	...	2
Gardens, groves, &c....	578	120	...	81	779
Total	...	...	...	...	8,638

1891-92.

Income.	Hoshiárpur.	Dasuah.	Garhshankar.	Una.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.
By sale of trees and dried timber	977	564	299	200	2,040
Grass	3	6	...	28	37
Kharkana	130	170	114	...	414
Lakh	...	133	190	340	663
Fruit	71	1	35	19	126
Miscellaneous	...	6	12	...	18
Gardens, groves, &c.	580	119	...	84	783
Total	1,761	999	650	671	4,081

1892-93.

Income.	Hoshiárpur.	Dasuah.	Garhshankar.	Una.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.
By sale of trees and dried timber	1,913	893	8,340	623	11,769
Grass	9	6	...	105	120
Kharkana	47	80	7	...	134
Lakh	...	...	...	43	43
Fruits	164	66	88	2	320
Miscellaneous	...	...	...	...	...
Gardens, groves, &c.	407	55	...	94	556
Total	2,540	1,100	8,435	867	12,942

1890-91.

Expenditure.	Hoshiárpur.	Dasuah.	Garhshankar.	Una.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.
Establishment	2,246	1,391	1,430	1,404	6,471
Tools, &c.	14	4	...	24	42
Repairs to Tools					
Extra Establishment	120	216	167	191	694
Miscellaneous	690	106	64	94	954
Total	3,070	1,717	1,661	1,713	8,161

1891-92.

Expenditure.	Hoshiárpur.	Dasuah.	Garshankar.	Una.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.
Establishment	2,266	1,409	1,425	1,426	6,526
Tools, &c.	35	7	3	55	100
Repairs to Tools					
Extra Establishment	156	30	147	320	653
Miscellaneous	611	32	78	129	850
Total	3,068	1,478	1,653	1,930	8,129

1892-93.

Expenditure.	Hoshiárpur.	Dasuah	Garhshankar.	Una.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.
Establishment	2,352	1,383	1,418	1,424	6,577
Tools, &c.	53	...	...	2	55
Repairs to Tools					
Extra Establishment	168	179	201	320	868
Miscellaneous	644	19	...	25	688
Total	3,217	1,581	1,619	1,771	8,188

The amount realized from encamping-grounds which is credited to provincial fund during the three years under report amounts to the sum of Rs. 10,209 as detailed below :—

1890-91.

	Hoshiárpur.	Dasuah.	Garhshankar.	Una.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.
By farming Land	1,166	568	460	431	2,625
„ sale of grass	29	85	32	96	242
„ „ „ Lakh	...	2	...	...	2
„ „ „ Munj grass	...	9	...	...	9
„ „ „ Timber	62	158	13	11	244
„ „ „ Fruit	96	6	7	10	119
Total	1,353	823	512	548	3,241

1891-92.

	Hoshiárpur.	Dasuah.	Garhshankar.	Una.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.
By farming Land	1,280	378	460	188	2,306
„ sale of grass	33	81	24	151	289
„ „ „ Lakh	...	...	...	...	...
„ „ „ Munj grass	...	15	...	...	15
„ „ „ Timber	16	49	46	88	199
„ „ „ Fruit	275	1	13	1	290
Total	1,604	524	543	428	3,099

1892-93.

	Hoshiárpur.	Dasuah.	Garhshankar	Una.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.
By farming Land	1,562	620	442	333	2,957
„ sale of grass	25	75	39	174	313
„ „ „ Lakh	...	...	...	...	...
„ „ „ Munj grass	...	1	...	...	1
„ „ „ Timber	1	70	...	4	75
„ „ „ Fruit	432	9	27	35	503
Total	2,020	775	508	546	3,849

The income realized during 1890-91, 1891-92 and 1892-93 from both sources is Rs. 11,879, Rs. 7,180 and Rs. 16,791 respectively, *i.e.*, the amount realized in 1892-93 is Rs. 4,912 in excess of the amount received in 1890-91 and Rs. 9,611 in excess of the income of 1891-92. This is due to the large sum realized in 1892-93 from sale of phulah, tút, beri, sarin, kíkar, drek, &c., trees on the Hoshiárpur-Rupar road in tahsíl Garhshankar.

ANANDALE GARDEN, SIMLA DISTRICT.

The operations are carried on at the following places :—

1. Anandale garden, which is more of a nursery than an ornamental garden.
2. The Mahásu orchards, 10 miles from Anandale, where fruit is the principal thing grown and young fruit trees propagated for distribution by Government and for sale.
3. *Station tree planting and nurseries.*—For this purpose forest trees and shrubs are grown near Anandale and planted about the Station when large enough. There is no income under this head.

The report issued by the Municipality contain details of what has been done for the past three years and are sent herewith :—

The following is an abstract of the principal information :—

ANANDALE GARDEN.

Income for the past three years :—

	Rs.
1890-91	11,165
1891-92	10,471
1892-93	9,407
Total	31,043

EXPENDITURE.

	Ordinary.	Capital.	Total
	Rs.	Rs.	Rs.
1890-91	8,138	1,663	9,801
1891-92	7,904	138	8,042
1892-93	8,694	754	9,448
Total	24,736	2,555	27,291

MAHASU ORCHARD.

Income for the past three years.

	Produce.	Government grant.	Total.
	Rs.	Rs.	Rs.
1890-91	1,338	1,500	2,838
1891-92	1,524	1,875	3,399
1892-93	2,892	1,125	4,017
Total	5,754	4,500	10,254

Value of trees distributed free of charge not included in above Rs. 2,100.

EXPENDITURE.

	Ordinary.	Capital.	Total.
	Rs.	Rs.	Rs.
1890-91	5,253	*Nil.*	5,253
1891-92	4,567	*Nil.*	4,567
1892-93	4,693	342	5,035
Total	14,513	342	14,855

STATION TREE PLANTING.

Expenditure for the past three years.

	Rs.
1890-91	475
1891-92	454
1892-93	529
Total	1,458

During the three years 4,191 grafted fruit trees have been distributed free of charge of which 1,611 were given to zamíndárs and others in the Simla District and 2,580 sent to the out-stations mentioned in the Annual Reports referred to above.

Under the head of Station tree planting, the following have been planted during the passed three years :—

Trees and shrubs	6,950
Willow and other cuttings...	3,400
Seed sown in Situ	$7\frac{1}{4}$ maunds.

The present condition of the trees already planted out is somewhat as follows :—

The Mahásu orchards are increasing in value and subject to the variations of the seasons will yield increased revenue annually.

In the Station where trees can be protected properly they are doing well, but in the neighbourhood of bazárs and isolated positions a certain amount of damage is done by cattle and people breaking the trees.

The rainfall has been above the average every season and exceptionally heavy in 1890. In 1891-92 it was however very unequally distributed and a large number of small seedling trees failed during the hot weather of last year.

HAZARA DISTRICT.

Rainfall.—The Statement No. I exhibits the average rainfall of past years and that of the triennial period under report. The total rainfall during last three years was :—

1890-91	...	...	...	...	...	...	38·81
1891-92	...	...	...	...	...	...	64·40
1892-93	...	...	...	...	...	...	50·34

and the average of the triennial period 51·18, that is 21·16 in excess of the average rainfall of last years. The heavy snow-fall during last winter has greatly damaged the fruit trees in this district, specially mangoes in the vicinity of Haripur and the Eucalypti everywhere.

Nurseries.—There are nine nurseries in this district under the charge of District and Municipal Boards, *viz.*, maintained by District Board 6, maintained by Municipal Board 3. A new nursery was formed during the period under review at Chittigati. The existing nurseries were also damaged by the recent heavy fall of snow, but are however doing well. The varieties of trees in the nurseries of this district are the same as already described in the last triennial report. About 1,000 young trees of various kinds were distributed to zamíndárs free or at nominal rates (to recoup the cost of the nursery) for private plantations. 200 stone fruit trees and 500 walnut, chestnut, mulberry and pine trees were supplied from the District Board nurseries at Abbottabad to the Secretary, Grass Committee, Abbottabad, for the Military rakh. 100 fruit trees were sent to the Superintendent of Jail, Abbottabad, for planting in the new Jail garden. Of the 300 apple, pear and plum trees received from the Simla Annandale garden during the last three years, 50 were given to lambardárs and jágírdárs of the district, and the remaining 250 planted in the public garden, Abbottabad.

Plantations.—Return No. III exhibits the area under plantation in the district situated on the Sarban Hill and in the Civil rakh, Abbottabad. 1·25 and ·75 acres of lands were planted with different seeds on both rakhs during the year 1890-91 and 1891-92, of which ·45 and ·55 failed, respectively. In the year 1892-93 some pine, plum, bakain and mulberry trees were successfully planted in ·25 acres of land on these rakhs.

Groves.—No groves were formed during the period under report, but the area of old groves was added to.

The following young trees were successfully planted on a bund, near Kot Najíbulla (on Haripur-Serai Kála road) for shade :—

Mulberry ...	...	...	...	...	...	...	130
Bakain ...	...	...	...	...	...	...	118
Banian ...	...	...	...	...	...	...	10
Bains ...	...	...	...	...	...	...	100

Avenues.—A map showing the extent to which the roads in the district have been planted with trees is herewith forwarded. The localities of nurseries and groves are also indicated upon it.

The District and Municipal Boards Establishments have attended chiefly to the maintenance and preservation of existing trees or roadsides during the last three years. Several district roads are on hilly tracts on which tree planting is very difficult. The roads on which tree planting operations have been carried on are :—

Dhobi Ghât road.	Haripur to Khánpur.
Haripur Bazár road.	Ditto to encamping-ground.
Ditto circular road.	Chittigati to Buffa.
Ditto to Darvesh.	Kháki to Shinkiári.
Ditto to Gházi.	Mansehra to Data.

Cultivation of fruit trees.—The Municipal Committees of Haripur and Abbottabad have large fruit gardens under their charge and maintain special establishments to look after them. A large number of fruit trees were destroyed by the last influx of locusts which did much damage to fruit gardens.

The following table will show the number of fruit trees planted in the public garden at Haripur during past three years :—

Hari ...	...	...	...	...	...	...	270
Khurmáni ...	...	...	...	...	...	...	340
Alucha ...	...	...	...	...	...	...	274
Loquat ...	...	...	...	...	...	...	210
Pears ...	...	...	...	...	...	...	24
Oranges ...	...	...	...	...	...	...	37
Alu Bukhara ...	...	...	...	...	...	...	144

The people in this district (especially in Haripur tahsíl) take much interest in planting fruit trees in their private gardens, which are numerous in the lower part of the district. Some fruit trees received from Simla were distributed to native gentlemen and Raises during the year 1889-90 and are said to be prospering.

Fodder trees.—No special fodder trees are especially planted in this district for feeding cattle, but the people use the leaves of certain trees for the purpose during times of scarcity or temporary drought.

Work done by private persons.—It is customary for zamíndárs and landowners to plant ornamental or shade producing trees in burial grounds and round tanks and wells, but this requires no special notice.

Income.—The total income derived from all sources and credited to District Funds was :—

	Rs.
1890-91	207
1891-92	214
1892-93	139
Total ...	560

and to Municipal Funds :—

1890-91	2,251
1891-92	1,929
1892-93	1,724
Total ...	5,904

The decrease is chiefly due to smaller income from the sale proceeds of fruits. Nearly all the fruit trees in the Haripur gardens were damaged and the fruits destroyed by locusts, and no income was realized on this account during two past years.

Expenditure.—The total expenditure incurred from District Funds was :—

	Rs.
1890-91	734
1891-92	700
1892-93	842
Total ...	2,276

and from Municipal Funds—

1890-91	1,592
1891-92	1,670
1892-93	1,713
Total ...	4,975

The increase in the expenditure from District Funds is due to the following reasons :—

(1.) Three new huts were constructed for gardeners or watchers at Rs. 170 during the year 1892-93.

(2.) A plot of land was purchased for extension of nurseries at Chattigati at Rs. 60 during the year 1891-92.

The establishments maintained by the District and Municipal Boards are :—

District Funds.

	Rs.
1 Máli @ Rs. 7 per mensem	84
2 Mális @ „ 6 each	144
4 „ @ „ 5 „	240
Total ...	468

Municipal Fund, Abbottabad.

1 Jamadár Máli @ Rs. 15 per mensem ...	180
1 Assistant Máli @ „ 7 „ ...	84
4 Gardeners @ „ 6 each ...	288
1 Gardener @ „ 2 per mensem ...	24
Total ...	576

Haripur.

					Rs.
1 Jamadár Máli	@ Rs.	15	per mensem	...	180
1 Assistant Máli	@ „	7	„	...	84
1 Gardener	@ „	6	„	...	72
8 Gardeners	@ „	5	„	...	480
			Total	...	816

There is no supervising establishment in this district.

The Overseer, Local Funds and the Tahsildars supervise arboricultural operations.

General remarks.—It has frequently been brought to notice that the poverty of the Hazára District Board makes it impossible to spend much money on arboriculture. The greater part of the income is not under the control of the Boards, being budgeted away for Educational, Medical and other Departments.

KÁNGRA DISTRICT.

Rainfall :—

Year.	*Rainfall.*
1890-91	142·69
1891-92	47·87
1892-93	86·16

Rainfall was sufficiently ample and general throughout the district in 1890-91, but it was very scanty in 1891-92. Indeed from October 1891 a severe drought prevailed which effected horticultural operations most injuriously, as owing to the holding off of the rains the sources of water-supply and irrigation had also failed to a great extent. In 1892-93, the rainfall was fair enough.

Nurseries.—

Year.	Area added.	Area given up owing to trees being transplanted.	Area remaining at the end of the year.
	Acres.	Acres.	Acres.
1890-91	·66	·51	6·51
1891-92	·43	·47	6·4
1892-93	·41	1·75	5·13
Dharmsala Municipal Committee.			
1890-91	...	...	3·67
1891-92	2·00	...	5·67
1892-93	·30	·30	5·67

In 1890-91 small additions were made to the nurseries in the Dera and Hamírpur tahsíls and the area of ·51 acres was given up on account of plants from the nurseries being transplanted into roadside avenues in the Hamírpur and Kángra tahsíls.

In the Dharmsála Municipal Committee no additions were made in 1890-91, plants dead or transplanted were replaced. In 1891-92 a plot of 2 acres was set apart as a nursery in the Dharmsála Municipality at a cost of Rs. 100. During the last year the Committee made a small addition to the nursery near Jogi Bari on Station road from Katcheri to the McLeod Ganj Bazár. The area of ·30 acres represents the portions of nurseries from which the plants were distributed to the residents of Dharmsála and planted on a small plot of hill slope near Deputy Commissioner's Katcheri on road going to Kotwali Bazár.

Plantations.—There are no plantations in the district, except in Dharmsala Municipality, the progress of which is detailed below :—

Year.	Area stocked at the beginning of the year.	Planted during the year.	Failure during the year.	Stocked at the end of the year.
	Acres.	Acres.	Acres.	Acres.
1890-91	58·13	...	...	58·13
1891-92	58·13	...	...	58·13
1892-93	58·13	1·40	·30	59·23

The above table will show that the Committee made no addition to the plantations during 1890-91 and 1891-92 and restricted its operation in this connection in re-placing the lost trees, but in 1892-93, the Committee made an addition of 1·4 acres to the existing nursery at Jogi Bári as referred to above.

Groves.—The area occupied by the groves in the Kángra district at the beginning of the year 1890-91 was 19·05. During the year 1890-91 to 1892-93 no additions were made and no failures occurred.

The groves on the Nurpur Dâk Bungalow hill and in the Kángra Dispensary and Patwár Khána and Tahsíl compounds were maintained in a fair condition during the triennial period, besides some more fruit trees being planted in Tahsíl garden at Kángra (*vide* report on fruit cultivation).

Avenues.—

District.	Year.	Length of roads fully stocked with trees at the beginning of the year.	Length of roads planted during the year.	Length of roads which failed during the year.	Length of roads fully stocked with trees alive at end of the year.
		Miles.	Miles.	Miles.	Miles.
Kángra District	1890-91	318·99	29·49	8·74	339·74
	1891-92	339·74	22·66	12·69	349·71
	1892-93	341·71	35·99	17·37	368·33
	Total ...	...	88·14	38·80	...
	Successful work ...	...	49·34	...	...
Dharmsála Municipality	1890-91	5·50	·85	...	6·35
	1891-92	6·35	...	...	6·35
	1892-93	6·35	...	...	6·35
	Total ...	...	·85	...	...
	Successful results ...	...	·85	...	...

88·14 new miles of roads were planted with trees during the triennial period under report as compared with 62·92 miles in the previous triennial period in the Kángra District, while ·85 only against 2·75 in the previous triennial period were planted by the Dharmsála Municipal Committee.

Fair progress was made in the year 1890-91 in planting new lines of trees in all the tahsíls including Kulu, while in the years 1891-92 and 1892-93, new lines of trees were planted in all the tahsíls of the district excepting Kulu.

In 1892-93 the following roads were planted with trees :—

10·95 miles in tahsíl :—

KANGRA.

Bhanu-Ladwára road.
Napota-Pathiar road.
Dadh-Malan road.
Dharmsála-Chambi Khad road.
Dhanetu-Rehlu road.

7·75 miles in tahsíl Pálampur :—

Maronda-Pálampur road.
Pálampur-Paprola road.
Pálampur-Paraur road.
Paraur-Paprola road.
Dudh-Baijnáth road.
Pálampur Station roads.

6·05 miles in tahsíl Dera on road from Jawálaji to Chamba Ferry.

9 miles in tahsíl Hamírpur on (1) road from Sujánpur to the boundary of Biláspur State, (2) Mandi-Phagwára road.

2·24 miles in tahsíl Núrpur on :—

Núrpur-Jáwali road.
Núrpur-Chaki river near Donera road.

The failures to the extent of 17·37 miles occurred during the last year in the tahsíls noted below:—

Kángra	10·6	Miles.
Dera	1·5	„
Pálampur	3·21	„
Hamírpur	2·70	„
Núrpur	0·35	„
Total ...	17·37	

The basis of our work in this connection has been the quinquennial programme of arboricultural operations extending over a period of five years, from 1889-90 to 1893-94. The programme has not been fully completed within the triennial period under report owing to (1) that after two years and in more dry parts of the district after three years' careful tending and watering a tree can be tall enough and strong enough to be left to itself; (2) that it did not rain in the first four months of the years 1890-91 to 1892-93, on account of which the energies of the establishment had more been directed to the maintaining of the previous year's work than to further new plantation, as it was impressed upon the Tahsíldars that the great point was not to execute a large work but to carry out a systematic scheme though on a small scale.

Income :—

District.	Year.	Ornamental gardens.	Roadside trees, &c.	Total.
		Rs.	Rs.	Rs.
Kángra District	1890-91	235	809	1,044
	1891-92	348	820	1,168
	1892-93	241	746	987
	Total ...	...	...	3,199
Dharmsála Municipality	1890-91	81	...	81
	1891-92	107	29	136
	1892-93	174	...	174
	Total ...	...	...	391

The receipts from the sale-proceeds of vegetable, grass and dead and decayed trees of the ornamental gardens, together with the roadside trees amount to Rs. 3,199 and Rs. 391 during the triennial period under report as compared with Rs. 1,858 and Rs. 109 during the previous triennial term in the Kángra District and Dharmsála Municipality respectively. The increase of Rs. 1,341 in the case of Kángra District is due to the fact that violent wind storms in the year 1890-91 and especially in 1891-92 destroyed many roadside trees and the increase of Rs. 282 in the case of Dharmsála Municipality is apparently on account of misclassification.

Expenditure :—

District.	Year.	Ornamental gardens.	Nurseries	Groves and avenues.	General supervising establishment.	Total.
		Rs.	Rs.	Rs.	Rs.	Rs.
Kángra District	1890-91	878	754	1,854	236	3,722
	1891-92	991	431	1,921	252	3,595
	1892-93	986	338	2,200	252	3,776
	Total ...	2,855	1,523	5,975	740	11,093
Dharmsála Municipality ...	1890-91	208	389	...	...	597
	1891-92	244	482	...	238	964
	1892-93	192	139	...	263	594
	Total ...	644	1,010	...	501	2,155

The total expenditure during the last triennial period was Rs. 11,093 and Rs. 2,155 as compared with Rs. 8,089 and Rs. 1,447 in the preceding triennial period in the Kángra District and the Dharmsála Municipal Committee respectively. The increase of Rs. 3,004 in the Kángra District is due to large outlay on Núrpur Dâk Bungalow hill plantation, roadside trees and establishing new nurseries in pursuance of the sanctioned scheme of arboriculture for the district, and the increase of Rs. 708 in the case of Dharmsála Municipal Committee is due to expenditure incurred in making additions to nurseries.

General remarks.—The following fruit trees were received from the Agri-Horticultural gardens at Lahore and Anandale gardens at Simla during the last two years for distribution to the professional growers aud propagation in the public gardens:—

1891-92.

Loquats	50
Oranges	50
Lemons	50
Apricots	49
Grapes	50
Greengages	68
Plums	25
Total	342

They were disposed of thus:—

European and Native residents of Dharmsála village... ...	123
Dharmsála Municipal gardens	100

the rest were sent to Kángra and Pálampur tahsíls for distribution to the villagers and planting in the Tahsíl gardens. Although there was a failure of winter rains and the summer were late few trees died. Those that I observed made a great growth of wood:—

Supplied from Anandale gardens, Simla.

Apples	250
Pears	100
Cherries	25
Total	375

They were distributed between the owners of gardens of upper and lower Dharmsála, *i. e.*, 282 to the upper ward and the rest 93 to the lower ward:—

Supplied from Agri-Horticultural gardens, Lahore.

Orange of sorts	190
Lime and citron	210
Pomelo	12
Figs	45
Mangoes	20
Plums	80
Pomegranates	80
Peaches	50
Nectarines	50
Vines	50
Total	787

These were disposed off as noted below:—

To the European residents of upper Dharmsála and gaddi agriculturists	106
To the landowners of lower Dharmsála and other adjacent villages	119

The rest, those were sent to the Tahsíldár, Kángra, which could not be kept at Dharmsála for fear of cold which was unusually severe during the last winters when the plants reached. They are still in stock for distribution when the weather is favorable for planting.

Besides this the District Board ordered two dozens two years old, alphanso mangoe plants and two dozens red plantains from Bombay at a cost of Rs. 76 for the Kángra Tahsíl garden. They were planted in the land manured two feet deep with old manure. They are reported to be doing excellently well. It is too soon to be able to report on the experiment of fruit growing in Kángra and Pálampur. A few black Tartarian cherries and apricots ripened this year. The fruit, little as it was, was excellent. I think it is better for the present to restrict fruit culture to the tahsíls of Kángra and Pálampur, because they are the most fertile, have the highest fall of rain and generally have artificial irrigation. In Kulu fruit growing is already a profession; Núrpur, Dera, and Hamírpur are too dry and are dependent on rain.

CANAL DIVISIONS.

1st DIVISION, BARI DOAB CANAL.

District Gurdáspur.

Operations.—As the detailed returns show the only important operation was felling of timber, and this was done on Navigation Channel and Sirkián Escape, from which nearly all available timber has been removed except on right bank between Channi and Mari Locks. Felling operations re still in hand on the Sirkián Escape, and a large quantity of valuable timber remains to be sold.

The lines of canal in the district are well-wooded, so that much extension is neither possible nor desirable. The existing timber, however, has been carefully looked after, and is, as a rule, in very good order.

Income.—The actual receipts are Rs. 36,172 and expenses Rs. 4,813, so that the financial results for the last three years are highly satisfactory.

Amritsar District, Kasúr and Sobráon Branches.

The operations executed during the past three years 1890-91 to 1892-93 consisted of—

I.—Maintenance of old plantation.
II.—Establishment of new plantation.
III.—Planting of avenue trees.

I.—Maintenance of old plantation.—There are altogether nine plantations that may be called old and well established. Five of them, namely, Jhandiála, Pakhoki, Deo, Sanghi, and Sarháli are on the lower Kasúr Branch, and five, namely, Gagarbhana, Reya, Khadur, and Khowáspur, and Khara on the Sobráon Branch. The first series of these plantations was started in 1884-85 and the operations since then are being continuously extended.

The extent and area of these plantations and the years in which they were sown are as follows:—

Kasúr Branch.

						Acres.
Jhandiála plantation	sown in	1884-85	from	B.M.	160 to 168	= 25½
Pakhoki	do.	do.	1884 85	do.	178·196	= 56·4
Deo	do.	do.	1886-87	do.	196·203	= 15·0
Sanghi	do.	do.	1887-88	do.	222 227	= 16·0
Sirháli	do.	do.	1887-88	do.	243·251	= 25·5

Sobráon Branch.

Gagarbhana plantation	sown in	1884-85	from	B.M.	149 to 155	= 21
Reya	do.	do.	1887-88	do.	155 to 165	= 29·5
Khadur	do.	do.	1887-88	do.	211-220	= 30·5
Khowáspur	do.	do.	1884-85	do.	220-223	= 10·0
Khara	do.	do.	1888-89	do.	269-293	=124·5

All these plantations with the exception of that at Khara were considered thoroughly established by end of 1889-90, but as the trees in some parts were not far enough advanced to be left without protection, and blanks had to be filled in, a beldár establishment was sanctioned on annual estimates for their maintenance. The water-courses were cleared of silt, and repaired, blanks were filled in, and the trees watered.

The following sites, however, are now considered safe and the fencing from round them has been removed:—

Pakhoki plantation	from	B.M.	182 to 196	both sides.
Sirháli	do.	do.	whole	do.
Gagarbhana	do.	do.	149-154	do.
Khadur	do.	do.	211-215	right side.
Reya	do.	do.	whole	do.

The wire thus obtained has partly been used on fencing a new kikar plantation called the Sirháli extension started in 1892-93 and the rest collected and stored for the Bahádarpur plantation, which will be mentioned below. The stream wheels used for watering trees in Jhandiála, Pakhoki, and Sirháli plantations were also removed as they were no longer required.

Two low places in the Reya plantations between the canal and the Patti Rájbaha, where the trees had partially died off have been filled up with earth, and replanted. This was done in 1892-93.

The kikar plantation which was started in 1888-89 came up well all over the area sown by the end of 1889-90, except in a few chains of sandhills in B.M. 279 right, where the trees planted in trenches failed. These were replanted, and most of them have grown up well. Besides this two small patches in B.M. 272 and 293 left side, where the trees had partially died (owing to the ground being too low, and to the water lodging there during the rains) have been filled with earth and replanted in 1892-93.

II.—Establishment of new plantations.—Four new plantations, namely, Talawan, Sirháli extension and Joura on the Kasúr Branch, and Bahádurpur on the Sobráon Branch, were started during the past three years. Out of these the last two which were started in 1892-93 and only partially planted during that year were stopped by the Superintending Engineer's orders as the ground was low and swampy. It is intended to silt up those reaches, and then do the work properly. The extent and areas of the first two plantations are as follows:—

	Acres.
Talawan plantation 168 to 178 B.M. = ...	50·2
Sriháli extension 257 to 257 do. = ...	22·7

The Talawan plantation was started in April 1891, and by the end of July 1891 it was so far advanced that the fencing and sowing was completed, but owing to the ground being low from B.M. 170 to 173, rain water lodged there and destroyed the young plants. These portions were refilled in 1892-93 by transplantation, and are now fairly stocked with trees.

The Talawan plantation is watered by means of outlets fixed on the canal except in the length from B.M. 174 to 178 where the ground is high. Irrigation is here effected by means of two stream wheels.

A small portion of chapper in B.M. 273 right side, where the water was always standing, has been filled with earth, and was replanted in 1892-93. The broadcast system of sowing shisham in these plantations was adopted as it was found better than sowing by trenches.

The new Sirháli plantation is an extension of the old one of the same name, it was started in May 1892, and by the end of July the work of ploughing and levelling off the ground making into irrigating compartments, and sowing kikar seeds was all done as well as the erection of posts and wire fencing. The seed has come up well all over this area, except in some small patches, where the plants died during last dry season, because the earth was bad. As this plantation was high, and could not be irrigated from the canal, water was brought from a village water-course from the Rasúlpur Rájbáha, the blank patches were refilled, and the plants promise fairly well.

An iron acqueduct which was no longer required in the old Sirháli plantation has been removed, and erected in this plantation for watering trees on the right bank. In all these plantations málís' huts have been provided for the establishment. The fencing is of wire fixed to 4½′ posts placed 12½′ apart on the berm of a ditch provided outside the fence line.

III.—Planting of avenue trees.—The total length of new avenue trees planted during the past three years is 8·0 miles. They have been planted along both banks of the canal in the following new plantations:—

	Miles.
Talawan plantation	4·0
Sirháli extension	2·0
Bahádurpur	2·0
Total	8·0

At these places there were no line trees before starting these plantations. Replanting line trees in old plantations has also been attended to wherever found necessary.

General remarks.—With the exception of the Khowáspur and the new Sirháli plantations which are purely kikar, all the others are of shisham. There are, however, a few groups of kikar trees in the Jhandiála, Pakhoki, Deo, and Khadur plantations.

Income.—The actual receipts are Rs. 10,001-11-10 and expenses Rs. 15,181-15-10.

Lahore District.

A very small portion of the canal in this Division extends into the Lahore district. A new plantation, the first in this district, has been started near Manihála from R. D. 300 to 306 having an area of 9½ acres. This was started in April 1891, and is now in a flourishing condition.

A mile of avenue trees has also been planted here, and is doing well.

The actual receipts are Rs. 371-5-0 and the expenses have been Rs. 1,964.

2ND DIVISION, BARI DOAB CANAL.

Plantations.—Under this head there was an area of 2,373 acres shown as fully stocked at the beginning of the triennial period. During the first year 1890-91 an area of 859·69 acres was transferred to the 3rd Division on that Division being formed, the timber from an area of 13·64 acres was cut and sold and 174·08 acres failed owing to excessive rain, thus reducing the area under plantations to 1,325·59 acres at end of that year. In the following year a plantation was formed on Main Branch Lower between R. D. 75 and 80,000 on both sides of canal, the area planted being 20·27 acres and an area of 105·62 acres was transferred from groves to plantations increasing the area under plantations to 1,451·48 acres. Last year an area of 3·49 acres at Kohâli on Lahore Branch under *kikar* plantations was cleared and the timber sold and shisham seed sown. This plantation has nearly all failed owing to *reh* in the soil. There are, however, still 3,000 young plants, but they are not in a healthy state. It is proposed to sow kikar seed in portions where the shisham has entirely failed. 23·17 acres of land under plantations in compounds of certain chaukís which have been dismantled was cleared and the timber disposed of. At the end of 1892-93, the area under plantations was 1,428·31 acres in which, with the exception mentioned, the plantation are in a satisfactory state and consist of shisham plants principally. In the groves, however, which have been transferred to plantations there are fruit and other trees and these are at the canal chaukís.

Groves.—The triennial period under report opened with an area 162·70 acres under this head. In the first year a small area of ·18 acres was planted at Aliwál Chauki on Lahore Branch and an area of 57·26 acres transferred to 3rd Division, leaving an area of 105·62 acres. In the year following 1891-92 this area under groves was transferred to head plantations, so that there is now no area under the head groves.

Avenues.—The length of avenues at beginning of the triennial period was 166·20 miles. Of this 63·14 miles were transferred to 3rd Division, leaving 103·06 miles, which was the length of avenues at end of 1892-93. There are a few gaps, but on the whole the avenues are in a flourishing condition. The gaps occur as a rule in places where the soil is bad. The avenue trees consist principally of shisham and kikar. There are also some tun and mulberry trees.

Expenditure and income.—The total expenditure during the period under report is Rs. 10,358 against Rs. 8,030 for the previous triennial period. The increase is due to expenditure on new plantations on Main Branch Lower and at Kohâli on Lahore Branch.

The income for the three years is Rs. 31,202 against Rs. 47,820 for previous three years. The decrease is due to a large portion of the plantations being transferred to 3rd Division.

The net profit on plantation for the three years under report is Rs. 20,844 against Rs. 39,790 for previous three years. The latter, however, included sales on the whole of the Main Branch Lower, the greater portion of which now forms the 3rd Division.

3RD DIVISION, BARI DOAB CANAL.

General.—In the last printed report this Division shows blank having been then part of the 2nd Division, Bâri Doâb Canal. The separation dates from April 1890, coincident with the period in review.

As a rule in this Division the areas or lengths will not increase from year to year as no extension is desired or easily attainable, all the available sites having been pretty well stocked; and any afforestation done generally takes the form of mere replacement of trees cut down for canal requirements or revenue receipts.

Nurseries.—There are no real nurseries maintained in this Division, any such needs being met from the newly enclosed plantations;—accordingly the Return No. II shows the final area in hand as *nil.*

Plantations, 1890-91.—The total area of plantation along canal banks taken over from the old 2nd Division was 859·69 acres, to this add 51 acres for a new plantation from R. D. 116 to 132 right done in February 1891, giving the total acreage of 910·69 up to end of 1890-91. This area of 51 acres between Tarn Târan and Ibban bridges has turned out very successful and is now 10 to 15′ high.

In 1891-92 the operations were as under—

	Acres.
Replacing old plantation by new at Bhuchar Lock Channel in all	23·5
Small areas replaced in various chauki compounds in all	7·5
Total ...	31
Add transfer from groves to plantations as per Form No. IV	57·66
Area shown in Form No. III	88·66

As, however, the area 31 acres was not new plantation but merely replacement this is again shown in column 5 of Form III for 1892-93, having been omitted by mistake in 1891-92.

In 1892-93 the only operation was 15·5 acres, plantation replaced at Bhuchar Lock Channel, this also is doing very well and is dealt with in the same way as the 31 acres in column 5.

It may be mentioned that the plantation sown in 1889-90, between Dull and Bedián, has turned out fairly well, but in many places the high jungle has been too much for the young trees and has caused blanks.

Groves.—Needs no remark for as ordered in Chief Engineer's Circular No. 75—5451I. of 28th December 1891, the whole area formerly shown as groves has (as above) been now transferred to the plantation sub-head.

Avenues.—Here consist of a line of trees on each side of the canal. The total length stocked as taken over from the 2nd Division was 63·14 miles, and gradually this has been completed until now it may be said the whole available length of 72·8 miles is fairly complete.

Revenue Accounts.—For the three years Form VI shows the total income as Rs. 35,544, but of this Rs. 11,555 is not strictly creditable to plantations, having been recovered from the sale of old standing wood on the Alpa Escape which is not included in these returns being neither avenue, plantation or grove, but an old almost disused cut, undisturbed and left unprotected for many years. The real revenue is therefore Rs. 23,989 against which set Rs. 15,660, the total expenses giving the net revenue for the three years as Rs. 8,329.

This of course is not really *net* as it takes no account of the original heavy expenditure 20 or 30 years ago incurred in stocking the present canal banks, and if a correct account were now possible it is pretty certain the profit would be negative.

UPPER SUTLEJ CANALS DIVISION.

Rainfall—No rainfall statement for the Division has been submitted with this report (*vide* instructions in Superintending Engineer's No. 2227, dated 21st December 1892).

The following table shows the rainfall at the sadar stations Lahore and Montgomery during the three years under review as compared with past years:—

Station.	1890-91.	1891-92.	1892-93.	Average.	
				Of 3 years.	Of past years.
Lahore	29·92	7·98	26·91	21·60	21·64
Montgomery	13·65	8·80	17·37	13·27	10·54

During the three years the rainfall in the Lahore district was about the average, and in the Montgomery district over 2·5″ above the average. At Lahore it was heaviest in 1890-91, smallest in the following year and considerably above the average in the last year. At Montgomery the rainfall was considerably above the average in the first and third years and about 2″ below the average in 1891-92. There were heavy winter rains in the first and third years, and very scanty rainfall in 1891-92. 1892-93 was a very peculiar year, there was little or no rain till the middle of July, and when the monsoon burst there was good rain in the rainy season and all through the winter to end of March.

Nurseries.—There are no nurseries in the Division.

Plantations.—The only plantations on these canals are in the chauki compounds, they were classed as groves in the previous triennial report, but under Chief Engineer's orders they have been transferred to plantations since 1891-92. As remarked on in the last report, there are very fine plantations of shisham trees at Hussain Khanwála chauki on the Katora Canal and at Gudar Malkána chauki between the Khanwah and Upper Sohág Canals. These plantations are now full grown and require no tending. The shisham trees at Ganda Singhwála, Lola, and Ludhewál chaukies have also grown well and require but little watering. The plantation at other chaukies consist of shisham siris, mulberry and pipal trees which are all thriving well except at Shah Yakka on the Khanwah Canal, which being located on the top of a mound (the remains of an old village) is not favourably situated for the growth of trees; and at Kalyána on the Lower Sohág Canal where there is no well and the plants are watered by a bhisti. A well is now proposed to be sunk at the latter place, and it is hoped the state of affairs will considerably

improve by the time the next report is submitted. The sinking of a well at Ladián chauki has put fresh life into the plants and they are growing well. Plantations of fruit trees were started last year at Gunda Singhwála, Hussain Khanwála, Lola, Ladián, Tahar and Dipálpur chaukies and they are all in flourishing condition.

On the Lower Sohág Canal a new plantation of shisham and a few fruit trees was started last year at Lálugudar chauki, which have all taken root and are in a promising condition. The old plantations in the other chaukies on this canal except Kaliána are thriving apace especially at Haveli, Kalewal and Chanwat which receive a watering from the canal during the flowing season.

The Arabian date-palms sown in some of the chauki compounds in 1888 have grown satisfactorily, especially at Mámoki where some have attained to a height of 10 to 12′, and 7 out of the 23 plants bore fruit last year; the date plants at the other chaukies, Ganda Singhwála, Lola, Haveli, Kalewál and Chanwat are from 3 to 6′ in height.

The seed lately supplied by the Superintending Engineer was sown at most of the chaukies in the Division at the end of last winter, but it has not yet germinated.

Groves.—There are no groves in the Division, those that were described as such in the previous report have been transferred to plantations as above explained.

Avenues.—There are no avenues in this Division properly so called, those shown in the statement are common country trees spontaneously grown which for the most part line the banks of the canals. They consist almost entirely of kikar, shisham, tamarisk and a small proportion of jand, ban and kareer trees.

These trees mostly grow near the inner edge of the canal channels, and are very frequently blown down into them by the high winds and dust storms which prevail in this part of country. To prevent this all trees growing within 10′ of the edge of the channel have, during the last two years, been cut down and sold on portions of the Upper Sutlej Canals. The work on the Katora Canal from Head to Khudián Regulator and on the Khanwah and Upper Sohág Canals above Hujra and Tahar respectively as well as on the north and south Rájbahás of the Kanwah Canal has been virtually finished and is in progress in the remaining lengths.

On the Lower Sohág Canal there are no trees except tamarisk, which has spontaneously grown up on the Main Line miles 29 to 33, Sohág Branch miles 6, 7, 8 and 16 to 20, and Pára Branch mile 0 to 10. There trees are of recent growth and generally small in size except on the Pára Branch where they have grown luxuriantly and are 8′ to 10′ high. Most of these are also growing near the edge of the channel and are being cut down.

Income.—The income is derived principally from sale of fallen and dried trees and trees cut down within 10′ of the edge of the channel, and sale of grass on banks for grazing purposes and munj and sarkanda reeds which sprout up spontaneously.

The income in the three years under report was as follows:—

	Rs.
1890-91	4,454
1891-92	8,105
1892-93	10,343
3	22,902
Average	7,634

against an average income of Rs. 3,500 in the previous three years. The increase as will be seen from Statement VI has mostly taken place in the income from plantations due to the large number of trees growing within 10′ of the channels having been cut and sold during the last two years. The income under the head miscellaneous has decreased due to the sarkanda grass growing on the banks having been rooted out to provide free passage for water. Almost the whole of the income is derived from the canals of the Upper Sutlej Series, the Lower Sohág contributes a very small portion.

Expenditure—The expenditure incurred has almost entirely been on maintaining or extending plantations in chauki compounds. The principal part of the expenditure is for watering the plants by a Persian wheel, where there are suitable wells in the compounds or by hand where there are no wells. The canals run only for a part of the year, and most of the chauki compounds are too high to be irrigated from them, the plants are, therefore, entirely watered from wells. The expenditure for the three years has been as follows:—

	Rs.
1890-91	1,466
1891-92	2,072
1892-93	2,679
3	6,217
Average	2,072

against an average of Rs. 1,427 in the previous three years. The increase is due chiefly to starting new plantations of fruit trees in several chauki compounds and watering the plants by Persian wheels instead of hand at Ladián and Bunga Hayat chaukies. The average income exceeds the expenditure by Rs. 5,562.

An index map of the canals showing the plantations and avenues is attached.

MULTAN CANALS DIVISION.

Avenues.—In this Division there are—

(*a*) The old Inundation Canals (Chenáb and Sutlej).

(*b*) Flood embankments of more recent date.

(*c*) The comparatively new Sidhnai Canal.

On the Inundation Canals there are large numbers of self-sown trees at irregular intervals. All canals on which such trees form fairly continuous lines are shown as avenues completed. The trees are shisham, kikar, siras and farásh. Certain selected lengths usually near to masonry regulating works (where beldárs have of necessity to be kept) or in places where there are roads along the banks have also been planted out at regular intervals with shisham and other trees. On the flood embankments regular double lines of trees have long existed, mostly shisham. These are included in the statement under Chenáb Canals. On the Sidhnai Canal there are no self-sown trees, all the avenues having been planted. The lines run along the foot of the outer slope of the bank and the trees are almost all shisham.

Plantations.—On the Sidhnai Canal there are in many places considerable widths of spare land alongside the canal banks. These are planted out and are irrigated by flow from the canal. They are fenced in with wire fencing as far as possible. The trees grown are mostly shisham. Some kikar trees are also grown in lines which are far apart, and run transversely across the long strip of ground, shisham being grown in between the lines of kikar. On the Inundation Canals attempts have been made to raise plantations by sowing kikar seed broadcast on the spoil banks; but hitherto little or no success has attended the operation. The rainfall is doubtless insufficient. There are also plantations in the compounds of the bungalows. The trees grown are shisham, kikar and siras, also some fruit trees. They are irrigated by flow or lift from the canals and occasionally by wells. On the Inundation Canal bungalows the trees are mostly now full grown and most of the land occupied. On the Sidhnai Canal they are nearly all young, and it is to these bungalows that operations are now chiefly confined.

Groves.—There are no groves.

Nurseries.—These are mostly on the Sidhnai Canal. They are made in the bungalow compound or in other suitable places adjoining the canal and irrigated by flow or lift from the canal. The young trees are raised almost entirely from seed and are nearly all shisham.

Receipts.—The receipts are almost entirely from the sale of grass of the timber of old self-sown trees on the Inundation Canals and of the loppings of the same. The kikar trees are regularly lopped, nearly all the thin branches being cut off. The trees recover in a year or two. Very little income has yet been derived from trees which have been planted by hand, whose cost has been charged against plantations, but in course of time a large income may be looked for from this source, particularly on the Sidhnai Canal as it crosses the railway.

Expenditure.—The chief item in the expenditure is the pay of the establishment employed to water and look after the trees and the cost of bullocks employed for lifting water where flow irrigation is not possible. Very little is spent in fencing.

General remarks.—The thinning out of some of the avenues and plantations will now be necessary and is being attended to.

INDUS CANALS DIVISION.

The rainfall of the Dera Gházi Khan district has been as follows:—

1890-91	5·97	inches.
1891-92	2·43	„
1892-93	7·74	„

In the last year the fall was unusually heavy.

As stated, however, in the last report, the trees in this Division are all watered by manual or by canal irrigation, and are not affected, to any appreciable extent, by variations in the rainfall.

Nurseries.—These are at present only maintained for the growth of shisham saplings which are planted out as soon as they are three or four years old. Practically half an acre is all the area necessary for the development of these young plants. As under recent orders of the Superintending Engineer, the expenditure on plantations is to be largely reduced, there will be no necessity now for a larger area.

Plantations.—The increase of 20·68 is due to the classification of the canal chaukies at Jhok, Paiga Sharíf Shah and Pír Adil as plantations.

In previous years they had not been included in this category.

Groves.—Nothing to report under this head.

Avenues.—The net result has been that 5·18 miles of well grown avenue are added every year. The losses from erosion of the river have been somewhat less than in the previous years; not only because erosion is being gradually checked, as the result of the reclamation operations, but because greater caution has been observed in planting out avenues in the vicinity of the river.

No alterations have been made in the kinds of trees planted out. More than 80 per cent. are still shishams, with a few siras, kikar and farásh at intervals among them.

A few Arabian date-palms were planted out as an experiment three years ago. The young saplings are doing well.

Income.—The income has been slowly expanding, and is likely to increase more rapidly in future. The older trees have now enough heartwood to be felled, and they are being cut down and used more freely for works within the Division than in previous years. Some excellent three inch planks were obtained, and driven as sheet piling below the Shoria Regulator; but the credit for the timber thus used was not adjusted before the end of the year. A considerable quantity is also being used as planking for foot bridges. The sales to the public are still comparatively limited, as the prices tendered are low.

Expenditure.—As remarked in para. 2 a considerable reduction is contemplated, and the staff of bhishtís will be now gradually reduced until there is an approximate balance between income and expenditure.

MUZAFFARGARH CANALS DIVISION.

Rainfall.—The average annual rainfall in this district for the past 13 years is 5·6 inches distributed as follows:—

1st April to 30th September	4·06
1st October to 31st March	1·50

The rainfall during the past three years is as below.

Year.	1st April to 30th September.	1st October to 31st March.	Total.
1890-91	4·06	4·46	8·52
1891-92	4·03	0·39	4·42
1892-93	5 86	2·73	8·59

The rainfall during past three years was above the average and was especially beneficial to mangoes.

Some damage, however, was done last autumn to the date crop owing to excessive rainfall.

Nurseries.—Nurseries have been established at three places, *viz.*, at Adit Shelter Hut, Shujra and Vasandewála, and are in good condition. During the planting season many plants have been transplanted in suitable places.

Plantations.—Mango and other fruit trees have been planted at three places other than in chauki compounds as under at Kulu Shelter Hut, Sardár Shelter Hut and Vasandewála.

Groves.—No groves have yet been made.

Avenues.—There are no avenues in the common acceptation of the term as there are no canal roads. But the trees transplanted from the nurseries and planted on the Kinjar and Mahra bund will be in the shape of avenues on completion.

As the count of trees has been discontinued no figures can be given, *vide* remark in covering letter.

Income.—The figures represent sales of wood thinnings, &c., trees which of necessity had to be cut down on canals owing to their being too close to the water's edge were auctioned and in many cases realized good prices.

Expenditure.—Represents cost of málís, bhishtís and coolie labor.

General remarks.—Muzaffargarh is an arid district in which young trees need special care and tending. In the wilder parts to which canal extensions are mainly confined the water difficulty is a serious one. The canals run for about six months in the year and after that the trees have to be hand watered. The dryness of the climate and the frequency of dust storms are also against the young growth, but when ones trees have established themselves they grow well.

The district is famous for the excellence of its shisham trees.

KARNAL DIVISION, WESTERN JUMNA CANAL.

Avenues.—The trees that were planted on the right and left embankment at Tájewála are doing well.

Old trees on Kharwan road are in good order. Young ones sustained damage, but are being renewed. Trees on Somb and Fattehgarh bunds, Dádupur, Buria and circular road in fair order.

The Main Canal from Indri to Munak is stocked with kikar trees, the trees that were planted during the years are in good order.

The Hánsi Canal is very fairly stocked with a miscellaneous assortment of trees. The operations have been confined to filling gaps in such places as gave a fairly continuous line.

From Rámrai downwards the Hánsi Branch is thickly afforested with trees of more or less mature growth comprising shisham, kikar, tun, nim, siras and other species usually planted out along canal banks. The Darba and Bahadra Rájbahás below the bifurcation at Mingni Khera are also well-wooded. Moreover all the old Rájbahás in the Hissár district are more or less impassible owing to thick growth of kikar and other trees.

Owing to the transition state of the Hánsi Canal banks and the excavations necessary for raising them there has been little planting out and attention has been directed and devoted towards thinning out existing trees with a view to their becoming fine timber trees and to future profits. Although there has been little planting out there has been much spontaneous growth all along the canal, principally of kikar trees and attention which would otherwise be devoted to planting out and watering young saplings is given to thinning and nursing them.

In this way good results are being arrived at with a minimum of cost. Kikar trees are very hardy and succeed with little trouble in these parts as the frost is seldom continuous enough to kill them; but in such places as Hánsi, Pali, Majra and Mingni Khera where the subsoil water is near the surface and rain water cannot easily drain off and malaria is to be dreaded, it is recognized that the *Eucalyptus* is the most valuable tree, and seeds were sown in March with a view to planting out groves in each of these places as there are suitable areas available which can easily be fenced in and protected from cattle at small expense.

A few Queensland peach, Malta orange, fig and other valuable fruit trees were planted in the small gardens attached to the Hissár and Hánsi chaukies in January. They are all thriving and are succeeding as well as was anticipated.

Sirsa Branch.—The transplantation from nurseries was only made during March 1893 on Sirsa Branch, so there has been no opportunity for failures to occur.

Nurseries.—Tájewála and Dádupur nurseries supplied plants for left protective embankment and roads at Dádupur.

Some experiments were made of *Eucalyptus* seed imported from South Australia; though sown carefully yet resulted in partial failure as did also the local acclimatised seed. A second supply from same source was got and sown; they have successfully germinated and been transplanted into pots with a view to further planting out at a more advanced stage.

Acclimatized *Eucalyptus* seeds sown in 1892-93 ultimately withered. Second sowing has resulted successfully in producing transplants in plots. *Eucalyptus* seed has been sown in earthenware pans at Narnaundh, Hánsi, Hissár and Mingni Khera. That sown at Hissár failed on two occasions. The young seedlings at Narnaundh, Hánsi and Mingni Khera are being transplanted in ordinary flower plots.

Nurseries on Sirsa Branch supplied plants for lines of the Rájbahás for a length of 2,000 yards. Trees were also planted in the compounds of chaukies.

¼ acre of nursery failed at Kaul and Budhera through the poverty of the soil.

Plantation.—515 shisham and tun and 97 *Eucalyptus* were planted as well as 300 young trees at Jaidhri and brickfield at Dádupur, the left bank of Somb bund was planted with shisham trees and *Eucalyptus*. Some failures occurred which were successfully replanted.

A large area with plantations thereon has been surrendered to zamíndárs through Civil authorities.

Spoil banks of Sirsa Branch, Dhanora Escape, and Dhanora Diversion have been sown with kikar seeds.

Financial results.—The sale proceeds from the canal plantations during the three years show total receipts as under—

	Rs.
1890-91	13,442
1891-92	9,629
1892-93	13,592
	36,663

Against the following expenditure :—

1890-91	4,624
1891-92	5,979
1892-93	9,118
	19,721

The comparison of the above figures shows a profit of Rs. 16,942. During these years a large number of trees have been cut down for sale and brick manufacture in progress on new Distributaries in the Hissár district, &c., at the same time giving the Hánsi Canal, Butána Rájbaha and new Main Line a necessary thinning. There is a very considerable fuel traffic on the canal. Timber and fuel are boated to Delhi throughout the year and the price obtained there is about 2½ times that obtained locally.

DELHI DIVISION, WESTERN JUMNA CANAL.

Rainfall.—Over the greater part of the Division the rainfall for the three years under report was fairly normal. In the Karnál and Rohtak districts violent fluctuations occurred and 1891-92 was probably less favorable than usual for arboricultural operations.

Nurseries.—These are indispensable wherever avenues or gardens are to be made and they have hitherto not been sufficiently utilised. Many small plots at convenient points are best for this purpose. These have been taken up at different canal chaukies and in the silting tanks on the new Delhi Branch (where the soil is well suited for nursery purposes), and in another year or two they should furnish an ample supply of young trees suitable for planting out. Large number of mango trees (for garden, &c.) and of shisham, jámans, &c., for line trees will then be obtainable. Nurseries that have outgrown themselves have been transferred to plantations.

Plantations.—The final figures under this head are the result of careful measurement and observation and show large corrections on previous statements. The considerable increase is due mainly to the inclusion of areas formerly omitted and to the transfer of 139·56 acres from groves.

Groves.—Under instructions from Chief Engineer this head has been abolished on canals.

Avenues.—This term seems to have been in some instances very loosely interpreted. Generally the assumption has been made that where a canal or distributary has trees on both banks it should be classed as a double avenue, and that consequently the length of avenue should be taken as double the length of the channel. For this Division this is certainly an erroneous assumption, as the line or road trees run along one bank only and the various lengths given in previous returns have had consequently to be largely modified. The progress in avenues has not been good due partly to bad or unsuitable soil but mainly to a faulty system of planting out small seedlings that required more care and attention than could be given them. With nurseries at suitable points it will be easy to avoid this fault in future and so save time and money in carrying out the work.

Income and expenditure.—The figures under these heads show generally a balance on the wrong side as might indeed be expected, seeing that in the greater part of the Division the present stage is mainly a stage of initiation and development. Some economies might no doubt be effected, and the expenditure brought more into line with the results. Last year 1892-93 was an unfortunate year so far as receipts were concerned especially under fruits, where the income fell to Rs. 398 from Rs. 2,333 in the year preceding. This great decrease was due almost entirely to the failure in the mango crop.

HISSAR DIVISION, WESTERN JUMNA CANAL.

First year of operations, Patiála Territory.—The second section of the Sirsa Branch is very nearly completed and this was the first year during which arboriculture operations were undertaken.

Total work to be done.—The whole of the operations to be undertaken stands thus:—

(*a*) To sow the whole of the spoil banks on both sides of the Main Canal banks for a length of 35 miles with kikar. The total area is 35 acres.

(*b*) To establish nurseries in the first class chauki compounds at Batah Dhakal and Dhanoda on the Main Canal and chaukies Badsikri and Tarkha on the Sudkan Rájbaha, so as to supply line trees for the Main Canal.

(*c*) To transplant young trees from the nurseries to the left bank of canal, so as to have a single line of shade giving trees.

(*d*) To plant groves of trees in each of 7 chauki compounds, including the two Rájbaha Chaukies Kerar and Khaial, Dhamtan Rájbaha, and also to plant some fruit trees in these compounds.

Work done during the year 1892-93.—The work done during 1892-93, the first year of operations, was—

(*a*) The whole of the spoil banks was ploughed up where the earth was not newly thrown up and good kikar seed sown broadcast in August 1892. With the exception of a few places on inspection showed that the seed sown had germinated throughout.

(*b*) Nurseries were prepared and established in the Rájbaha chaukies on the Sudkan Rájbaha and in the three first class chaukies Batoh, Dhakal and Dhanoda. The total area was 1·25 acres. It was found, however, that the soil at Batoh and Dhakal were not quite favorable, and as there was a difficulty as to water supply 0·25 acres were abandoned.

(*c*) The nursery at Dhandana in the first section has been most successful, and young shisham trees sown in July were found to be 4½ feet to 6½ feet in length in February.

There were sufficient plants in the nursery not only to supply the lower part of the first section but to spare for the upper part of the second section. One thousand young trees were therefore taken from the nursery and transplanted as line trees from R. D. 238,000 to 275,000, or distance of 7·4 canal miles.

Work to be done during 1893-94.—The future operations will be confined—

(*a*) Completing the few unsuccessful patches of spoil banks.

(*b*) Maintaining the nurseries at Barsikri, Tarkha and Dhanoda.

(*c*) To complete the line trees left bank from the nurseries.

(*d*) To plant groves and fruit trees in the seven chauki compounds.

FEROZEPORE DIVISION, SIRHIND CANAL.

Rainfall.—The general average in the Division is from 18 to 20 inches in the upper portion and from 5 to 7 inches in the lower portion.

During the years 1890-93 rainfall was as follows:—

Year.	Station.	Rainfall.	Average for three years.
1890-91	Ferozepore	21·48	
1891-92	Ditto	9·40	20·11
1892-93	Ditto	29·44	
1890-91	Gholia, mile 50, Abohar Branch	22·10	
1891-92	Ditto	8·0	20·03
1892-93	Ditto	30·0	
1890-91	Gobindgarh, mile 123, Abohar Branch	12·55	
1891-92	Ditto	5·30	11·93
1892-93	Ditto	17·95	
1890-91	Raiki, mile 100, Bhatinda Branch	10·6	
1891-92	Ditto	4·7	16·10
1892-93	Ditto	33·0	

The above figures show rainfall to have been generally greatest in the year 1892-93 and least in the year 1891-92. It may, however, be considered as hopeless to attempt to rear young trees in this Division except in places where canal water can be supplied.

Nurseries.—At the beginning of the triennial period the area under nurseries was 1·25 acres and now the area is 1·86 acres.

This area is in Bhatinda Sub-Division and is laid out in the chauki compounds for transplanting purposes; but, as a rule, all transplanting is done by moving young trees from land taken up for the main canal.

Plantations.—The area stocked with plantations at the end of the year 1889-90 was 941·67 acres and the area stocked at the end of the year 1892-93 is 1,984·59 acres, giving an increase of 1,042·92 acres during the three years. This is a very startling increase, but is chiefly accounted for by the fact that previous to the year 1892-93 no accurate measurement of the area actually stocked with plantations was made. A fair area of new plantations was however added during the period under report.

Sutlej Navigation Channel.—But little has been done on this channel as nearly all the area commanded by canal water was already stocked with trees.

An area of 25 acres in the 12th and 13th miles, of 3 acres in the 19th mile and 2 acres in the 22nd mile was planted out, and all the young trees are doing well.

Abohar Branch.—Plantations in Gholia Sub-Division have been extended as follows:—

Mile 51 to 52, right bank, sown with kikar and an area of 9 acres is doing well.

Mile 57 to 58, left bank, silting reach levelled off and an area of 9 acres sown with shisham. This area was only sown at the end of the year 1892-93.

Mile 65 to 66, right and left banks, silting reaches levelled off and at the end of the year 1892-93 sown with shisham seed.

Mile 67 to 69, an area of 33 acres sown at the end of 1891-92. The young trees have come up well and average in height about 3·0'.

Mile 72 to 73, left bank, sown with shisham seed at the end of 1892-93 and the seed has germinated well.

An area of 112 acres on which very young trees were growing at the commencement of the year 1890-91 has been carefully tended, and failure in this area is not now probable.

In Asabutar Sub-Division very little has been done towards extension of plantations, and in fact the only area in which young trees are to be seen between miles 105 and 112 is just below Asabutar, mile 90, where 7 acres of shisham are doing well.

Of 563·52 acres taken up for plantations in this Sub-Division, only 141·59 acres are stocked with trees.

Alamwála Sub-Division.—The area of canal banks stocked with plantations is 106·30 acres out of a possible 387·76 acres and a good deal therefore still remains to be done. Very little extension of plantations on the canal banks was done during the past three years, but in the Abohar Reservoir, where an area of 800 acres is available for plantations, a fresh area of 191 acres has been successfully stocked with trees giving a whole total of 391 acres in the reservoir to the end of the year 1892-93.

During the past three years a great deal has been done to the chauki compounds on the Abohar Branch and of a total area 104·02 acres available for plantations an area of 62 acres is now successfully stocked.

Stream wheels have been erected at Samalsar Gobindgarh and Deviwála and nearly all compounds are now irrigated from the Canal or Rájbahás.

Bhatinda Sub-Division.—In this Sub-Division of an area of 429 acres of canal bank available for plantations, about 240 acres are now stocked with trees and though only an area of some 40 acres has been added within the last three years, yet the area on which young trees were growing at the beginning of the year 1891-92 has been very carefully looked after and failures have been rare.

An area of 400 acres is taken up for plantations in the Bhatinda Reservoir, and of this an area of 30 acres has been successfully stocked with trees during the past three years.

Groves.—There are none in the Division, the area of 134·70 acres shown at the end of the year 1889-90 having been transferred to plantations.

Avenues.—86·60 miles of avenues were shown at the end of 1889-90, and the reduction in length during the past three years has been 28·40 miles. Gaps in existing avenues have been filled and several long lengths in which failures occurred were again planted out.

Income.—The average yearly income from plantation in the Division has been during the past three years Rs. 2,602. This income was chiefly derived from the leasing of certain lengths for the grazing of cattle. Some fuel also has been sold but as the trees in the Division are for the most part young the wood sold was not of much value.

Expenditure.—The average expenditure during the past three years has been Rs. 11,989, exceeding the average income by Rs. 9,387.

Until the plantations grow older and until a greater proportion of the area set aside for plantations is stocked, the expenditure must remain greatly in excess of the income in this Division.

LUDHIANA DIVISION, SIRHIND CANAL.

Rainfall.—The average rainfall for the period under review as compared with the previous triennial period is as below.

Station.	1890-93.	1887-90.
Rúpar	31·84	34·87
Ludhiána	27·34	23·58

These stations are, however, situated in forest districts, while the larger portion of the area under arboricultural treatment in the Division is situated in "dry" and "very dry" to arid districts. In 1890-91 the rains broke seasonably, were fairly distributed and the fall was about the average in amount.

In 1891-92 the monsoon did not break till the last week in July and the rainfall was distinctly below the average. The winter rain also was scanty and young plants and fruit trees suffered considerably in consequence. In 1892-93 the first burst of the monsoon was on the 12th July and the season was marked by exceptionally heavy showers, 4·45 inches being recorded at Ludhiána on the 12th July 1892 and again 4·70 inches on the 13th September 1892. But the most peculiar feature of the season was the unusually heavy fall of rain on the lower portions of the branches of the canal in the "arid" and "very dry" areas. For example in July and August 20·6 inches were recorded at Pula (70th mile *Bhatinda Branch*) the average *annual* fall being only about 9 inches.

To sum up 1890-91 was year of average rainfall, 1891-92 was a year of scanty rainfall, and 1892-93 was a year of excessive rainfall and therefore the rainfall of the period was if anything against arboricultural operation as the average of a dry and wet year cannot be taken and the two years stated as being favorable for tree growing.

Nurseries.—During the three years from 1890 to 1893 there has been an increase of 7·29 acres under nurseries about equally distributed between the *Abohar* and *Bhatinda Branches.* On the *Main Line* and *Combined Branches* the areas have remained stationary, as might have been expected, as the young plants can be cheaply carried by boat to any sites on these channels and the nurseries are situated at the most suitable localities as regards facilities for watering and supervision.

On the *Abohar* and *Bhatinda Branches,* on the other hand, new nurseries have to be started and old ones abandoned and transferred to "plantations" as the afforestation slowly extends itself into the more dry and arid regions. Thus during the three years 19 acres in round numbers were brought under nurseries and 12 acres given up.

There were 17·51 acres of nurseries at the end of the year 1892-93 as compared with 10·22 acres at the end of last triennial period.

Plantations.—The total area available for afforestations in the Division is 6,608 acres. Of this 4,250·52 acres had been successfully planted at the end of 1889-90 and an addition of 188 acres has been brought under trees during the last three years, making a total of 4,438·52 acres.

The increase by Branches is as under—

Main Line	*Nil.*	
Combined Branch	18·00	acres.
Abohar Branch	5·15	„
Bhatinda Branch	164·85	„
Total ...	188·00	„

On the *Main Line* efforts are made every year to get trees to grow on the bare patches between the 18th and 24th miles, seeds being sown broadcast on the spoil banks. But the soil here is very sandy and only the sarkanda grass can flourish. With the exception of these sandy bits and the portion occupied by silting reaches near Chamkour, the banks of the Main Line are fairly covered with kikar and shisham trees from which a considerable quantity of fuel has been yearly received by judicious thinning out.

The *Combined Branch* is only two miles in length with high spoil banks and deep channel. It is not so thickly covered as the Main Line, but has a fair number of kikar trees scattered throughout its whole length. The soil contains a large proportion of kankar, the trees grow but slowly in consequence and no felling or thinning operations can be attempted.

The greater portion of the available area on the *Abohar Branch* has been planted. During the past three years planting operations have been confined to the silting reaches lately abandoned.

In these reaches the soil is very favorable and the young plants are doing well.

On the *Bhatinda Branch*, or at least the greater portion of it, it is very difficult to get trees to grow at all without artificial irrigation. The upper portion is fairly stocked with trees and has during the last two years yielded a fair amount of revenue in the form of fuel and charcoal supplied to the Brick Manufacture at Rámpur and the Rúpar Workshops. But the lower portion passes through the "very dry" and arid zones and plantations can only be attempted in these patches commanded by the canal. Under these circumstances the addition of 164·85 acres of plantations on this Branch may be regarded as satisfactory.

Groves.—There are no groves in the Division. Nurseries on which seedlings are allowed to grow up being included under the sub-head plantations.

Avenues.—The length of avenues was 191·65 miles at the end of 1892-93 as compared with 95·98 miles at the beginning of 1890-91.

On the *Main Line* 6 miles of avenues were added during 1892-93. All mango trees from the Rúpar and Rámpur Nurseries.

On the *Combined Branch* 1·52 miles of avenues have been added and are watered by a stream wheel.

On the *Abohar Branch* 32·35 miles have been added, principally *shishams* and *jamans* planted on the reclaimed silting reaches and near the chaukis.

On the *Bhatinda Branch* 55·8 miles have been added and are watered partly by stream wheels and partly from pipes fixed in the notches of the falls.

As the greater length of canal can be commanded by stream wheels, or pipes taking off from the notches of the falls the avenues should grow apace.

Receipts and expenditure.—The receipts and expenditure are best shown together for the sake of comparison. The table below shows the receipts and expenditure for each of the three years to nearest rupees.

Year.	Receipts.	Expenditure.
	Rs.	Rs.
1890-91	16,252	7,660
1891-92	12,598	6,771
1892-93	19,816	8,053
Total	48,666	22,484
Average	16,222	7,494

The average profit for the three years is Rs. 8,800. Of the total receipts Rs. 22,869 came from plantations mostly in the shape of fuel or charcoal, while Rs. 25,640 were received from miscellaneous canal produce, chiefly sale of grass. The balance of Rs. 371 was received from avenues—dead trees.

The receipts and expenditure by Branches is as below.

Branch.	Receipts.	Expenditure.
	Rs.	Rs.
Main Line	30,833	8,152
Combined	207	472
Abohar	10,378	3,846
Bhatinda	7,463	10,014
Total	48,666	22,484

The *Main Line* it will be seen returns a good profit as also the *Abohar Branch*. The *Combined Branch* plantation cannot be felled for the reasons stated above, but the expenditure is small and confined to maintenance of avenues.

The Bhatinda Branch has now begun to bring in a fair amount of revenue considering the inhospitable country it traverses and in a few more years will doubtless yield a good annual profit.

PATIALA DIVISION, SIRHIND CANAL.

Rainfall.—During the past three years the rainfall of 1890-91 was about the average for this Division; the amount which fell in 1891-92 was deficient, especially in the first half of the year; but in 1892-93 the rainfall was considerably above the average throughout.

Nurseries.—There was but a small extension of the area under nurseries as these were numerous and well stocked. The work done under this head was chiefly thinning and planting out, in the course of which the nursery area was reduced by 14·44 acres, the contents of which were dispersed in plantation plots.

Plantations.—In previous arboriculture returns the areas entered in the first column of Statement No. III did not represent the total areas available for planting, but as it appears, showed only those portions on each Branch within the limits of which plantation operations were actually undertaken. The whole plantable area on each Branch has now been computed by taking the whole area of land occupied for the Branch and deducting from it all plots or strips taken up by roads and by channels of any kind. The results are detailed in the accompanying Statement No. III, and make up in the aggregate a total of 3,881·88 acres. The total area given in the corresponding column of the statement submitted with the previous triennial report was 1,411 acres. The area now given will practically remain constant in future returns. During the period under review the stocked area under plantations has risen from 708 acres to 2,485·12 acres. But a very great part of this large increase is merely apparent, as it includes an area of no less than 1,240·42 acres formerly classed as "groves" but which was transferred to "plantations" as the more appropriate head in 1891-92.

Groves.—This head of classification having been abolished on canals and the areas formerly shown under it having been brought under the head of "plantations," Statement No. IV will in future be a blank return.

Avenues.—During the past three years there has been a net increase of 42·68 miles in the length of canal planted with avenue trees and is thus distributed—

	Miles.
Feeder and Patiála Navigation Channel	10·50
Kotla Branch	29·58
Ghaggar Branch	2·60

on the Choa Branch and in parts of the other Branches considerable lengths of old avenue line broken by failure of the original plants have been renewed, but an account of these has not been kept as it should have been, and will be in future.

Income.—The total income during the period under review was Rs. 5,902. This amount does not include revenue derived from sale of grass, which was Rs. 8,794, during the same period. In the statement of income submitted with the previous triennial report the amount shown for the three years then reported on was Rs. 11,216, but this (as was formerly the practice) included Rs. 6,520, realized by grass sales. So far therefore from there being a falling off in the income of the period treated of in this report, there has really been a satisfactory increase.

Expenditure.—The total expenditure during the past three years on arboriculture operations amounts to Rs. 40,691 as compared with Rs. 40,490 for the three years preceding. A reduction in expenditure has already commenced and in future years it will become much less than before because operations will not be on such an extensive scale and their cost will be very considerably lessened by utilizing old fencing plant, the first cost of which is a heavy charge.

Good progress has been made in arboricultural operations in this Division during the last three years. Most parts of the canal where the soil is good and where irrigation by flow or by means of stream wheels is feasible, are well planted, and as the young plantations grow up to maturity the income from them will improve greatly.

A tracing of the Division on a scale of 8 miles to an inch is submitted with this report showing graphically the state of progress in arboricultural operations up to which they were brought at the end of the triennial period now reported upon.

1st DIVISION, CHENAB CANAL.

Avenues, Main Line.—The avenues operations on the Main Line have not proved very successful on account of the kankary and kalar nature of the soil. Some avenues were planted out at Khanki which it is hoped will succeed, but the avenues on the Main Line are very ragged. The alteration to Main Line will also destroy a good many of the existing trees. When this is completed the work of completing the avenues can then be undertaken with greater hopes.

Kot Nikka Branch.—The soil on this Branch was very favorable for growing trees, and flow watering was also praticable in some places. Avenues on this Branch have been an entire success. It will be seen from the statement that 20·2 miles were transplanted and only 4·5 miles failed during the last three years.

The plants were mostly shisham plants and were taken from nurseries sown at chauki compounds of Kila Rám Kour, Shahjamál, Jandoki and Thatha Jahad. Where flow watering was not practicable the trees have regularly been watered by monthly paid bhishtís.

There are four lines of good big shady shisham trees in the first 8 miles and below the 8th mile there is a single line of well-grown shisham trees on right bank at the outer toe of the spoil bank. These trees are all healthy and green.

Medora Rájbaha.—Shisham plants were transplanted from the Thatha Jahad nursery along the left bank of this Rájbaha at the outer toe of the spoil bank from 3rd to 10th mile, a distance of 7 miles, in February 1892. They have since been regularly watered by bhishtís and the trees are all green and promising.

Plantations, supply Channel.—The first 8 miles of canal were completed during the year and the spoil banks comprising about 208 acres were sown, and have for the most part succeeded well. The old channel from Garhi Gola to Chenáwán has fallen into disuse. For this reason about 21 acres of this plantation was cut down and used for the river bund at Garhi Gola and for the river spurs at Khanki. Out of this 21 acres a lot of old roots have shot up and will soon make into plantation again.

Main Line.—In order to thin out the growth of trees about 1,600 trees were removed from certain parts of the spoil bank, and transplanted in other parts of the bank in February 1892. An area of about 28 acres was planted during the last three years and has proved a success.

The bank was ploughed over and seed sown broadcast.

Kot Nikka Branch.—An area of about 10 acres was planted along the left bank of this Branch and in the chauki compounds during the last three years. The spoil banks were ploughed and shisham seed sown broadcast just before the rains. When well-grown the plantation was thinned out. The trees look promising and will make good useful timber trees in time.

Nurseries.—Only 1·5 acre of shisham nursery was sown at Thatha Jahad chauki compound which was transplanted on the Medora Rájbaha.

2ND DIVISION, CHENAB CANAL.

The canal in this Division has been under construction during the three years, and a start only in the formation of plantations has therefore yet been made.

The work has been practically confined to the formation and maintenance of nurseries at chauki compounds, and the subsequent planting out of some of the chauki compounds and of a few miles of avenue trees along selected lengths of canal banks.

The nurseries are now mostly in a flourishing condition. They have already supplied a large number of line trees, and are still heavily stocked with seedlings, ready for planting out in the next season.

The positions where avenues have been so far planted are—

(1) On the Mián Ali Branch from R. D. 25,000 to 34,000 right bank, 25,000 to 27,500 left bank, and 1,00,000 to 1,09,000 left bank in each case a single line of trees well established, and (2) on Rakh Branch from R. D. 0 to 35,000 left bank (single line of trees flourishing) 1,14,000 to 1,20,000 (single line lately planted) and 1,37,000 to 1,42,000 (3 or 4 lines also lately established) extensions will in the succeeding season be taken in hand and pushed on.

The expenditure in the first two years have been mostly incurred on the plantations which were last year transferred to the 1st Division. The expenditure in the third year was entirely incurred in this Division.

SWAT RIVER CANAL DIVISION.

At the close of the previous three years ending 31st March 1890 the area shown under groves, which included all areas previously shown under heads of nurseries and plantations amounted to 98 acres. The area now reported under the head of plantations which includes the above 98 acre is 107·8 acres. The difference between these areas is 9·8 acres plus one small nursery of 0·48 acres represents the area added to plantations during the three years under review, during which attention was mainly directed to the extension of avenues, almost all the area available for plantations having been already utilized.

2. The increase in the mileage of roads and canals stocked with trees during these three years has been 52·72 miles. Besides this a second or third line of trees has been added in several cases to roads or channels previously reported as fully stocked.

3. The great bulk of these avenue trees have been raised by sowing along small watercourses on each side of the road. The young trees which are almost entirely shisham with a few mulberry, and farásh intermixed without exception are flourishing vigorously. Thinning out has been carried on regularly where required.

4. The total expenditure for the three years reviewed has been Rs. 13,408. The income has only been Rs. 644, showing an increase of Rs. 539 over that obtained during the preceding three years. No increase of any importance in the receipts can be expected

PROVINCIAL DIVISION.

PESHAWAR PROVINCIAL DIVISION.

Rainfall.—The rainfall during the three years, especially during the year 1892-93, has been very high. The snowfall in 1891-92 was practically *nil*, in 1892-93 very heavy.

Nurseries.—Very little progress has been made in formation of nurseries, the total area taken up for nurseries during the period under review throughout the Division = 2·25 — 1·83 = 0·42.

The large percentage of failures is due to difficulty in procuring water and to the bad nature of soil.

Plantations.—No attempt is made to grow trees for producing timber, the endeavour of this Department being confined to the extension and maintenance of the roadside avenues.

Groves.—A slight progress has been made in keeping up and planting groves during the two years 1891-92 and 1892-93. 127 acres were stocked with plants; these, as well as the nurseries planted by this Department, are only intended for planting trees along the roadsides as soon as they are strong enough for the purpose.

Avenues.—Many of the trees which are fairly established along the roadsides in the avenues held by this Department are destroyed in places owing to their isolated position by sheep, goat, cattle, &c., and to preserve them an efficient supervision is necessary, but this would necessitate a heavy expenditure.

Income.—During the period under review the total income amounted to Rs. 1,903.

This represents the sale of tree loppings, grass, &c.

Expenditure.—The gross expenditure on arboriculture during the period under review amounted to Rs. 19,903.

The net expenditure after deducting income Rs. 1,903 therefore equals Rs. 18,000.

RAWALPINDI PROVINCIAL DIVISION.

Rawalpindi Sub-Division.

For arboricultural purposes this Sub-division comprises 87 miles of the Lahore and Peshawar road, 14 miles of the Rawalpindi-Baracow road, ½ mile of Lawrencepur link road, 4 miles of Hazro-Hatti road, ½ mile of Gujar Khan Link road, and 66 miles of Tarnaul and Khushalgarh road.

On these roads there are three distinct classes of arboriculture, namely, nurseries, avenues and groves. The nurseries are all confined to the compounds of the rest-houses. On the Lahore and Peshawar road line trees to form avenues have been planted along the grass berms on the sides of the roads and the groves are formed on the side of the Lahore and Peshawar road wherever the soil seems to have been suitable.

In 1891 and 1892, 26 miles of avenues on the Grand Trunk Road were extended, but were for the most part completely destroyed by locusts. These trees have nearly all been replanted, having been taken from the different rest-house compounds. The progress therefore on avenues, though showing no increase on the years 1891 and 1892 is practically 26 miles, as 26 miles of trees destroyed by locust have been replanted.

Nurseries.—No additions during the years 1891 and 1892, during these years the young plants were removed and planted out on the Lahore and Peshawar road avenues in place of trees destroyed by locusts.

During the past year 1892-1893 an addition of 0·54 acres has been made. The nursery in each rest-house along the Lahore and Peshawar road has been slightly added to, the total addition amounting to 0·54 acres. The largest addition has been in Chuari rest-house compound. All these young trees are thriving and by next year there should be sufficient young plants to stock some 30 miles of avenues.

Avenues.—There have been practically no additions to the avenues during the past three years.

In miles 139, 140 and 141 there is a good line of large kikar trees, and in 142, 145 and 146 two lines of young shisham trees. In mile 150, 152, 154 and 158 a single line of shisham on each side of the road. All these trees are thriving. In miles 164 and 165 there is a double line of shisham on each side of the road. From mile 167 to 172 the road passes through the Rawalpindi Cantonments and is lined with a fine avenue of large shisham trees. Again between Rawalpindi Cantonments and mile 221 there are 23 miles of avenue trees, of which 18 miles are single lines, 4½ miles are double lines of trees, and ½ mile with three lines of trees on each side. Of these about a quarter the total number are large and well developed trees, and about half are trees which are flourishing but still require attention.

Groves.—In 1890-91 there was an addition of 6·59 acres to groves, in the Hassan Abdal section of the Lahore and Peshâwar road, but since then no addition has been made; with the exception of the addition noted above, nearly all the trees in the groves are fine old trees and require no attention. The object of these groves was to provide shade for resting travellers, but since the railway has been opened the traffic on the road has been so much reduced that it is a rare thing to see any one seeking the shade and shelter which these fine large trees afford. It seems therefore inadvisable to add to the areas of existing groves.

Expenditure and revenue.—During the past three years Rs. 17,447 have been spent on arboriculture in this Sub-division and the revenue realized amounts to Rs. 4,368.

The difference Rs. 13,079 is accounted for by the renewal of 26 miles of line trees, containing roughly 4,576 trees with an addition of ½ acre of nurseries, from which say 6,000 trees could be removed for transplantation. The cost per tree reared during the past three years is therefore roughly Rs. $\frac{13,079}{4,576 + 6,000}$ = Rs. $\frac{13,079}{10,600}$ = 1·2 rupees per tree.

Jhelum Sub-Division.

Avenues.—About ten miles of the Lahore and Peshâwar road in Jhelum District have been provided with double lines of avenues of young *shisham* trees during the last three years. The avenues planted during the previous three years were also well cared for so that with the exception of a few trees here and there, they have grown beyond watering; at present over 20 miles of the road are stocked with avenues.

Groves.—The total area of groves on this road as reported in the previous triennial report is 91·90 acres, out of which 76·31 acres are now fully stocked with trees. Owing to the unusual drought in 1891-92, hardly any arboricultural operations could be carried on. Hence only 1·3 acres have been stocked with young trees during the three years.

Nurseries.—The locusts that came in great numbers in this district during 1891-92 destroyed all the existing nurseries. They have now been reclaimed and some extensions made. The total area of land now under nurseries is nearly an acre.

Revenue.—The revenue realized during the last three years from the sale of grass and dead trees on the road amounts to Rs. 1,865. This shows an increase of Rs. 173 over the revenue realized during the previous three years.

Expenditure.—The expenditure incurred on arboricultural operations during the last three years amounts to Rs. 8,457. The greater portion of this road runs through hilly tracts and arboricultural operations have been started only from the last five years. Hence the expenditure is much heavier than the income realized. This shows an increase of Rs. 4,175 over the sum spent during the previous three years.

KOHAT PROVINCIAL DIVISION.

Rainfall.—The rainfall in the Division is not recorded by the Public Works Department.

Nurseries.—Whatever endeavours were formerly made to plant and support nurseries have entirely stopped during the last two years. The locusts which infested the Punjab during the cold weather of 1891-92 entirely spoiled all the nurseries, killing all young trees and regularly devastating the district. Endeavours are now being made to commence the nurseries again.

Plantations.—There are practically no plantations in the Division. To raise any trees at all anywhere, away from a station, or rest-house, where there is a plentiful supply of water is nearly impossible in the Kohât District. In many places the drinking water is saline, and there are few places where plantations could thrive. Attempts will be made again near the Public Works rest-houses.

Groves.—These failed to a large extent, owing to the visitation of the locusts, but are slowly being renewed.

Avenues.—Trees in avenues, the same as all the other trees in the district, suffered from the locusts, and have hardly yet reached their former vigour. The expenditure incurred was more for improving the existing trees, which were damaged, than for planting out new trees. The trees which are mainly planted and which seem to thrive best, are shisham, mulberry and kîkar.

Besides these the pîpal, banian and farash are grown.

Expenditure and income.—The expenditure in this Division for the last three years has been Rs. 5,267, while the income has been only Rs. 49-4-6. The reason for no income is, that the trees are all young, and no proceeds are to be obtained from sale of loppings, &c. The soil is poor for the most part, and the grass on the roadsides cannot be sold, as no one cares to buy the same. The people are poor and have not the wherewithal to purchase the grazing.

GUJRANWALA PROVINCIAL DIVISION.

GUJRANWALA SUB-DIVISION.

The only roads under the Public Works Department in Gujránwála District, on which trees are planted are:—

i. Lahore and Pesháwar road, from mile 22 to 63 in Gujránwála District, *viz.*, about 41 miles and two link roads, one leading from Grand Trunk Road in mile 29 to Kámoki Railway Station, and second from mile 51 near Ghakkar to Railway Station, about 1½ miles in length.

ii. Wazírabad and Siálkot road within the Gujránwála District, about 5¼ miles.

The Lahore and Pesháwar road, including link roads has avenues and groves throughout its entire length, and the graphic statement or map which accompanies herewith shows the miles which are fully planted, and which are partially planted with old trees and young trees.

A lot of young trees were planted in several miles, but several of them were eaten up by the locusts and some withered up along the outer edge of the berms on sides of the metalled portion. For the last three years they have been watered and protected with bushes, and otherwise taken care of by the bhishtís employed for the purpose. The plants have generally grown satisfactorily and they are all now in good state.

In 1889-90 nurseries of shisham were planted in the compounds of the rest-houses at Wazírabad, Ghakkar and Dhillanwáli; but owing to the establishment being insufficient the nursery of Dhillanwáli rest-house was dried up, but those of the Ghakkar and Wazírabad rest-houses were in good state. Some young trees were transplanted from both these nurseries to the roadside. The four portions for roadside nurseries about one mile in length have been protected with wire fencing and three of them have been planted. After a period of four years the plants will be fit to be transplanted in the gaps alluded to on the Lahore and Pesháwar road.

On Siálkot and Wazírabad road young trees were planted in several miles, but they were withered up owing to the insufficient establishment. Young trees from nurseries were not found available for plantation, and no further effort was made for the plantation of other portions of the road.

No ornamental trees or garden were planted during this period, but some fruit trees planted in the compound of Wazírabad rest-house in 1887-88 and 1888-89 had grown up well; but in the year 1890-91 the locusts injured them very much. Afterwards proper measures were taken for their restoration and the result is this that they are now in good condition.

GUJRAT SUB-DIVISION.

The chief roads and places fit for the arboriculture operations in the Gujrát Sub-division consists of as below:—

I.—Grand Trunk Road commencing from mile 64½ near Kathala ending at left bank of the Jhelum mile 101, length of 36½ miles.

II.—Branch road at Gujrát, which branches off at mile 70 Grand Trunk Road and again meets it in mile 72 after passing on the east side of town of Gujrát and near the Katcheri.

III.—Roads leading from Grand Trunk Road to all road buildings in the Gujrát Sub-division on Grand Trunk Road which are five in number.

IV.—*Bhimbar Bund.*—This is a bund constructed in a length of about 1½ miles along the left bank of the Bhimbar Khander nallas for preventing flood waters of both these nallas damaging villages and town of Gujrát.

Grand Trunk Road.—On this road there are avenues, groves and nurseries as shown in the tracing attached herewith. The road is partially planted with trees and partially with young plants.

This road has got shisham trees and plants also which are all along the outer edge of the berms on both sides of the metalled portion.

Every year young plants of shisham are transplanted from nurseries to roadside and they are watered and protected and taken care of by the málís employed for this purpose.

In year 1889-90 there were shisham plants on the Grand Trunk Road only in 8 miles, *i.e.*, 71, 72, 74, 75, 85, 86, 100 and 101. In 1890-91 400 shisham trees were transplanted from the nurseries to roadsides in mile 70 and in years 1891-92 and 1892-93 miles 68, 69, 71, 72, 73, 75, 82, 83, 84, 85, 92 and 101 were also filled up with new shisham trees and all these were watered, protected and taken care of, in every respect for last three years.

Now there are shisham trees and plants in 16 miles of Grand Trunk Road, out of which a large number have grown up very satisfactorily. There were some failures, on account of very young and tender plants having been removed from the nurseries too early and consequently died, but the dead ones were again replaced by new ones.

It has been found that the bigger the plants are when transplanted more than 4 feet in height, the better and more satisfactory is the progress made by them.

The custom of transplanting small plants about 1 or 2 feet high is very bad, because they require a much longer time to get over transplantation and consequently have to be very carefully attended to. Beside this there is great chance of their withering up and being damaged.

II.—*Branch Road.*—On this road there are avenues (all shisham trees along road). They are protected and taken care of. They are almost all grown up trees, whenever any of them dies, it is replaced by a new one (plant) from the nurseries.

III.—On roads leading to rest-houses there are partially grown up trees and partially young plants which are taken care of by the road coolies.

IV.—*Bhimbar Bund.*—On this at first when constructed three years ago there were no trees at all—but having planted on it, reeds, farash and willow trees and also having sown shisham reeds a jungle has been formed—every year some money is spent on this and it is day by day getting thick and is proving very satisfactory.

On the Grand Trunk Road there are no nurseries except in Gujrát Rest House and Lala Musa Rest House which are every year filled up by sowing new seeds to replace the young plants removed from them to road side.

There are no ornamental gardens in this sub-division.

In Gujrát Rest House and Kathala Rest House there are some fruit trees which are taken care of.

No new trees having been planted during last 3 years.

JALANDHAR PROVINCIAL DIVISION.

Rainfall.—The rainfall during the three years is shewn in Statement No. I. It will be seen that the fall during the year under report in the Jalandhar, Hoshiárpur, Kángra, Ludhiána and Ferozepore Districts of this Division has been sufficient, being respectively 34·10″, 55·05″, 155·63″, 41·96″ and 29·44″ or nearly double the average of the last three years (Kángra excepted) which had been 17·68″, 28·89″, 118·93″, 22·12″ and 15·93″ respectively.

The establishment employed on watering the roadside trees had in consequence been dismissed temporarily.

2. The rainfall has been taken from the *Punjab Gazette.*

Nurseries.—There are six nurseries in this Division, having an aggregate area of 7·05 acres—*vide* Statement No. II.

These nurseries, as remarked in the triennial report ending 31st March 1890, are not sufficient for the requirements of the Division, as trees had to be obtained from elsewhere for planting them along the Provincial lines of road.

Plantations.—There are no plantations in this Division.

Groves.—There were 496·81 acres under groves at the beginning of the year of which 0·40 acres failed during the year—*vide* Statement No. IV.

Avenues.—There are the following roads in this Division :—

I.—Grand Trunk Road from Khanna to left bank of Beás, 87 miles.

II.—Jalandhar-Hoshiárpur road, from Jalandar to the point where the Jalandhar District towards Hoshiárpur terminates, 16 miles.

III.—Hoshiárpur-Dharmsála road, 80 miles. This road runs through the hills, for the most part, and only 8·29 miles are suitable for avenues—*vide* Statement No. V.

IV.—Kángra valley cart road including branch road, 67 miles. This road also runs through the hills, but, as a rule, through better country than the foregoing. There are 65·00 miles suitable for avenues and of these 16·32 are planted—*vide* Statement No. V.

V.—Ludhiána-Ferozepore road, 81·5 miles.

		Miles.
Of items	I	8
Do.	II	*Nil.*
Do.	III	*Nil.*
Do.	IV	7·24
Do.	V	0·65

were planted during the year under review and 65·57, 14·35, 8·12, 33·83 and 26·06 miles, respectively, were planted previously. The trees planted are shisham, mulberry, kíkar and tún.

Income.—The income from the several sub-heads of arboriculture realized and credited to Government as Provincial receipts during the year amounted to Rs. 10,620 against Rs. 7,212 and Rs. 9,171 in the two preceding years. The increase in income during the year is due to better arrangements made for disposing of road produce.

Expenditure.—The total expenditure on the several sub-heads of arboriculture in the Division during the year amounts to Rs. 6,831, as compared with Rs. 5,883 and Rs. 5,005 in the two preceding years, the increase is chiefly due to extension of avenues and nurseries.

SIMLA PROVINCIAL DIVISION.

Rainfall.—The rainfall during the three years is shewn in Statement No. I. The actual rainfall of last official year exceeds that of the preceding year by 1·22; but it is less by 7·49 inches than that of 1890-91. The rainfall has been taken from the *Punjab Gazettes.*

Nurseries.—There is no regular nursery planting in this Division as will be seen from Statement No. II.

Plantations.—There are no regular plantation in this Division as will be been from Statement No. III.

Groves.—There are no groves in this Division.

About 1,300 trees and shrubs were planted during 1890-91 and 1891-92 on the hill sides above the Army Head Quarters and Military Secretariat Offices at Simla but these do not increase the area of such groves.

Besides these trees would come within Municipal limits of Simla, a report on which is presumably submitted by the Deputy Commissioner.

On "Prospect Hill" some sites of dismantled houses have been planted out with shrubs and the place made into a pleasure ground.

Avenues.—There are no regular arboricultural operations in this Division. The Hindustán-Thibet and the Kálka-Simla roads pass through Native States. The only portion over which the Executive Engineer is supposed to have any control is a strip 100 feet wide on each side of the road, but over reboising this he has no control at all. Every endeavour is being made to encourage young trees to grow at the following places :—

1. Viceregal Lodge.
2. Prospect Hill.
3. Foreign Office.
4. Army Head Quarters.
5. Winterfield.
6. Barnes Court.
7. Ellerslie.
8. Bemnore.
9. Koti landslip, mile 7, Kálka-Simla Cart Road.

Income.—The ornamental gardens under charge of this Division are at the places detailed in Statement No. II.

A sum of Rs. 11 was realized by sale of fallen trees in "Ellerslie" and "Barnes Court" compounds during 1890-91 and 1891-92.

Expenditure.—Rupees 15,673 is the total expenditure incurred as below :—

	1890-91.	1891-92.	1892-93.
	Rs.	Rs.	Rs.
Laying out ground, Viceregal Lodge	5,117	...	...
Maintenance of gardens at Viceregal Lodge ...	...	3,017	2,980
Ditto (supplying heating apparatus, etc., at Viceregal Lodge)	...	...	2,204
Maintenance of plantations, &c., on "Prospect Hill"	...	...	394
Maintenance of gardens at "Barnes" Court and "Ellerslie"	537	514	499
Ditto ditto at "Benmore" ...	...	185	226
Total	5,654	3,716	6,303

AMBALLA PROVINCIAL DIVISION.

Rainfall.—The Statement No. 1 shews the rainfall during the three years which has been taken from the *Punjab Gazettes.*

Nurseries.—The Statement No. 2 shews that there are no nurseries in this Division, except in the year 1890-91, during which the total area 2·39 acres was transferred leaving no balance at the end.

Plantations.—There are no plantations in this Division.

Groves.—There are no groves in this Division.

Avenues.—The following roads are in this Division :—

I.—Grand Trunk Road.—From 89 to 161 mile = 123 miles. This road runs through Karnál and Amballa Districts. The following miles of this road being within the boundary of the Amballa Cantonment are under the charge of the Executive Engineer, Amballa Military Works Division.

2,337 running feet of miles 119, 120, 121, 122 and 125 1 running feet of mile 23=3·68 miles. The failure of sowing of 17·6 miles along the road in patches in Karnál District is owing to extremely rainless and hot season of 1892.

II.—Amballa and Kálka Road.—Amballa and Kálka road from 4th to 38 mile =34·63 miles, but the length of road suitable for avenue is 33·97 miles as the aggregate width of Ghaggar river, Jhujjra and Sukna crossings, which cross this road in miles 21½ 36½, and 32½ respectively is =·66 mile.

Income.—The sum of Rs. 2,704 against Rs. 5,485 and Rs. 3,179 in the two preceding years on account of sale-proceeds of dead and fallen trees and grass and fruits of the roads under charge of this Division was received during the year under reference and credited to Provincial Receipts.

The decrease is due to the grass on Grand Trunk Road from mile 108 to 133 and Amballa and Kálka road, 4th to 14th mile, having been given to the 10th Bengal Lancers and 18th Hussars and Royal Horse Artillery by order of the Punjab Government in the Public Works Department without cost.

The net income during the past three years was as below :—

	Rs.
1890-91	3,179
1891-92	5,485
1892-93	2,704
Total	11,368

The average net income after deducting the average expenditure of the past three years arrives to Rs. 4,649, thus :—

Rs. 11,368—6,719 = Rs. 4,649.

Expenditure.—The amount of Rs. 2,403 against Rs. 2,516 and Rs. 1,800 in the previous years was expended on the maintenance and repairs and avenues.

DELHI PROVINCIAL DIVISION.

Rainfall.—The average rainfall for the Delhi District is 32·40 inches for the past three years, that for the year under report was 29·06, of which 23·98 inches fell between the 1st April and 30th September and 5·08 inches during the other half of the year.

Nurseries.—There are no nurseries in this Division. The reason for the absence of them is that young trees of a size suitable for planting on the roadside can be had almost anywhere at a very small cost, and it is not possible to grow them cheaper in the nurseries.

Plantations and groves.—There are no plantations or groves in this Division.

Avenues.—The lengths of avenues on the roads in the Division are shown below:—

Grand Trunk Road.

	Miles.
In Municipal charge	1·50
Unfit for avenues	0·50
Avenues	18·10
Unplanted	17·90
Total	38·00

Delhi-Sirsa Road.

	Miles.
In Municipal charge	1·00
Unfit for avenues	1·05
Avenues	13·48
Unplanted	0·47
Total	16·00

Delhi-Muthra Road.

	Miles.
Avenues	21·86
Unfit for avenues	1·00
Unplanted	5·14
Total	28·00

Delhi-Gurgáon Road.

	Miles.
In Municipal charge	1·50
Unfit for avenues	1·75
Avenues	11·85
Unplanted	1·65
Total	16·75

The lengths shown as unfit for avenues are those where the road passes through a village or town and there is no room for an avenue.

The lengths planted during the year were:—

	Miles.
(*a*) Grand Trunk road	0·50
(*b*) Muthra road	1·50
(*c*) Sirsa road	0·75
(*d*) Gurgáon road	0·25
Total	3·00

On the other hand the lengths which failed were:—

	Miles.
(*a*) Grand Trunk road	0·50
(*b*) Muthra road	1·00
(*c*) Sirsa road	0·50
(*d*) Gurgáon road	0·25
Total	2·25

The failures were due to the scarcity of water and the ravages of white ants.

Income.—The average income from arboriculture for the past three years is Rs. 1,334, that for the year under report is Rs. 1,210, decrease being due to receipt of small income from groves and avenues.

Expenditure.—The average expenditure on arboriculture for the past three years was Rs. 1,956, while that for the year under reference was Rs. 2,043.

DERA ISMAIL KHAN PROVINCIAL DIVISION.

Nurseries.—The area under seedlings at the end of 1889-90 was 2·09 acres, and an area of ·16 acres was added during the years under report; but an area of ·55 acres which was becoming a grove in the compound of the Department Public Works Rest-house at Dera Ismail Khan was found to obstruct free ventilation, and was cleared away. This leaves the total area of nurseries at the end of these three years at 1·70 acres.

Plantations.—At the beginning of 1890-91 the area under plantations was 155·97 acres, three acres have since been added, but as 1·55 acres failed, the balance now is 157·42 acres. The plantation is situated on the right bank of the Indus opposite Dera Ismail Khan, and the reason for the failure appears to be that the roots of the plants reached a substratum of sand from which they could obtain no nourishment.

Groves.—At the beginning of the period under report the area of groves was only 2 00 acres, but in 1891-92, 8·95 acres were added. This consisted principally of the trees round Fort Akálgarh, which had not previously been taken into account. Last year there were failures to the extent of ·59 acres, due to a deficiency of water, this leaves the area under groves at 10·36 acres at the end of the period under report.

Avenues.—Very little has been done during the past three years under this head the failures have been trifling, but at the same time the additions have also been insignificant. The reason for this is that the supply of water on the roads in this Division is small and it has been considered advisable to plant trees only for short distances from the source of water-supply, and look after these carefully. On the whole there has been a slight increase in the length of avenues in the Division.

DERA GHAZI KHAN PROVINCIAL DIVISION.

No operations on a large scale were carried on during the last three years. They were confined merely to (*a*) watering and rearing young plants already planted on the roadsides, (*b*) replacing those that failed and (*c*) planting four nurseries at Dera Gházi Khan, Fázilpur, and miles 3rd and 5th on the Dera Gházi Khan-Loralái road. The plants from the nursery at Dera Gházi Khan were used in replacing dead trees and the plants that failed on the Deraját road. The second nursery at Fázilpur was damaged by the floods of 1892 and supplied very few plants which were used in replacing older plants that failed along the roadside between Fázilpur and Rájanpur. The third and fourth nurseries supplied a large number of plants which were set along the roadside in miles 5 and 6 of the Dera Gházi-Khan Loralái road. There are still some plants in the last two nurseries which will suffice for extending the avenues for another 2½ miles.

Dera Gházi Khan-Loralái Road.

0·11 acres was added to the area under groves at Khur, Rakhi Munh and Sakhi Sarwar in 1890-91 and 1891-92. These groves are all in good condition. An extension of 0·86 miles has also been made to the roadside avenues.

Dera Gházi Khan-Koreshi Ferry Road.

There is nothing of any importance that needs notice, the roadside avenues consist of full grown trees.

Deraját Road.

The nurseries at Dera Gházi Khan and Fázilpur supplied plants to replace the failures on this road. Total expenditure incurred on the avenue amounted to Rs. 3,716 and the income from sale of dead trees and prunings, &c., was Rs. 894. A mile of road was planted in 1890-91, but it failed on account of the heavy floods of that year.

The plants put down on the road are mostly shisham and are all in a satisfactory condition.

Chenáb-Indus Road.

There is nothing of any importance that is worth noting, except that the length of avenues has been increased by 0·56 mile during the three years under review and the failures shewn during the three years in 6·06 miles were due to the road being inundated by the river Indus.

LAHORE PROVINCIAL DIVISION.

Rainfall.—Furnishes statistics of rainfall during three years. From this it would appear that the average of the three years under review was 21·61 as against 17·59 of previous three years.

Nurseries.—There are nine nurseries of small areas, out of which six are on Lahore and Ferozepore road (section from Sutlej to Lahore) and the rest on three other roads.

Plantations.—There are no plantations.

Groves.—There are some old groves on Lahore and Pesháwar road and no new addition has yet been made.

Avenues.—The road mileage of avenues on different roads is as follows :—

		Miles.
(*a*)	Grand Trunk Road, Attári to Shálamar, including drainage cut near Shálamar	14·81
(*b*)	Lahore and Pesháwar road section in Lahore District ...	11·71
(*c*)	Lahore and Ferozpore road, section from Sutlej to Lahore ...	38·71
(*d*)	Ditto ditto section Kasúr to Raewind	10·46
(*e*)	Lahore and Pindi Bhattián road, section between Lahore and Shekhupur	11·45
(*f*)	Roads in Civil Station of Lahore	4·48
	Total	91·62

This however should be read thus to show the actual length of avenues :—

	Length of road.				*Lines of trees.*	*Total length of single line.*
(*a*)	4·08	×	2	=	8·16	
	4·64	×	3	=	13·92	
	3·81	×	4	=	15·24	
	0·88	×	5	=	4·40	
	0·61	×	6	=	3·66	
	0·32	×	7	=	2·24	
	0·47	×	8	=	3·76	
	14·81				51·38	
						51·38
(*b*)	0·81	×	1	=	0·81	
	6·59	×	2	=	13·18	
	1·58	×	3	=	4·74	
	2·26	×	4	=	9·04	
	0·11	×	5	=	0·55	
	0·36	×	6	=	2·16	
	11·71				30·48	
						30·48
(*c*)	1·51	×	1	=	1·51	
	8·03	×	2	=	16·06	
	7·09	×	3	=	21·27	
	8·45	×	4	=	33·80	
	4·30	×	5	=	21·50	
	6·31	×	6	=	37·86	
	2·08	×	7	=	14·56	
	0·74	×	8	=	5·92	
	0·20	×	9	=	1·80	
	38·71				154·28	
						154·28
(*d*)	4·32	×	1	=	4·32	
	4·76	×	2	=	9·52	
	0·66	×	3	=	1·98	
	0·72	×	4	=	2·86	
	10·46				18·70	
						18·70
(*e*)	3·57	×	1	=	3·57	
	4·50	×	2	=	9·00	
	2·00	×	3	=	6·00	
	1·00	×	4	=	4·00	
	0·32	×	5	=	1·60	
	0·06	×	6	=	0·36	
	11·45				24·53	
						24·53
(*f*)	0·27	×	1	=	0·27	
	2·67	×	2	=	5·34	
	0·47	×	3	=	1·41	
	0·12	×	4	=	0·48	
	0·77	×	6	=	4·62	
	0·18	×	7	=	1·26	
	4·48				13·38	
						13·38
				Grand Total	...	292·75

The difference between the total length at beginning (column 4 of Statement VI) and that at end of column 7 is thus accounted for.

		Length of Road.
Total length at beginning 1890-91 ...	... ...	123·51
	Miles.	
Transferred to Amritsar Division on its formation ...	34·25	
Ditto to Lahore Municipality.	11·95*	
Failure	1·44	
		47·64
		84·87
Add length planted during three years...		6·75
Total at end ...	...	91·62

*Section of Station Roads	5·30
Whole of section Shálamár to Rávi	6·65
Total	11·95

Income.—The revenue realized on account of sale of loppings, fallen and dry trees, as well as roadside grass is Rs. 10,456 or an average of Rs. 3,485.

Expenditure.—Total gross expenditure on the arboricultural operations during the period under notice is Rs. 15,420. The net expenditure therefore after deducting the income is Rs, 15,420—10,456,=Rs. 4,964.

AMRITSAR PROVINCIAL DIVISION.

During the three years from 1887-88 to 1889-90 arboricultural operations within the limits of the Amritsar Provincial Division, were carried on at a loss, from a pecuniary point of view. The number of miles of trees planted each year was however double the yearly plantings undertaken in the last three years, *viz.*, 1890-91, 1891-92 and 1892-93. Of these latter years the first was one of about normal rainfall in the Amritsar District, the second was a very dry, and the last a very wet year. Financially the best results were obtained during the year of normal rainfall. In this year the income was about double the expenditure.

During the next or very dry year the expenditure exceeded the income by about 25 per cent., and during the last or abnormally wet year there was still a profit on the year's undertakings but of only half the rate which obtained during the normal year.

MULTAN PROVINCIAL DIVISION.

Multan District.

The area occupied by nurseries and transferred to groves during the triennial period amounts to ·18 acres.

The only area of a plot of land on which nurseries were stocked during 1890-91 and 1891-92 was ·07 acres which has been extended during 1892-93 by an additional one acre, as the old plot of land for nurseries was shaded by grown up trees on side of the road and was no more beneficial for tending the nurseries during 1891-92.

The nurseries in stock were insufficient and owing to the season being favorable purchases amounting to Rs. 40 from other sources were made to improve the arboriculture operations.

The length of road suitable for avenues at the end of 1889-90 was 7·70 and at the end of 1892-93 it has been increased to 9·80 miles. This increase of 2·10 miles is due to the transfer of the new approach road to the Railway bridge over river Chenáb at Multan, and the relinquishment of the old Ferry road. The length of road fully stocked with trees at the end of 1889-90 was 6·50 miles, which has since been increased during the triennial period under report to 8·60 miles of which ·90 mile of old Ferry road with trees was surrendered, and there remained 7·70 miles. Besides owing to the unusual heavy rains and storms the young plants suffered considerably. The income during the triennial period has amounted to Rs. 222 (including cost of trees on the old Ferry road surrendered) against an expenditure of Rs. 1,043 for maintenance and extension of groves and avenues, *i.e.*, Rs. 612+432=Rs. 1,043.

* *N. B.*—This however represented in the actual length of avenues is 12·21 miles, that is to say 1·29 miles has one line and 5·46 miles have double lines.

Montgomery and Jhang Districts.

The Jhang and Chicháwatni road has been transferred to this Department last year (*i.e.*, 1892) and brief resumé of last year's operations only is given below.

This road was taken over from the District authorities in the beginning of the year 1892. There has been no change in the groves or avenues on the road during the year. Portion of the existing avenues taken over (*i.e.*, mile 0 to 6) consisted of young trees which counted on the date of taking over to be 3,266 in all. Watering of these young trees was kept on in the hot season up to end of August and 102 more plants were added during the period, thus raising the total number to 3,368. The watering was stopped however during the rains and the following cold season. The plants counted on 31st March 1893 were however 3,193, thus showing a deficit of 175 trees, which have died away.

There is nothing particular about the other avenues and groves on the road.

There has been no income from the arboriculture operations during the year.

LIBRARY OF THE BOMBAY BRANCH OF THE ROYAL ASIATIC SOCIETY

STATEMENT No. I.

Rainfall Return.

District.	Year.	Average rainfall of past years.			Rainfall of years under report.			Remarks.
		1st April to 30th September.	1st October to 31st March.	Total.	1st April to 30th September.	1st October to 31st March.	Total.	
Muzaffargarh ...	1890-91	4·64	1·06	5·70	4·06	4·46	8·52	
	1891-92				4·03	0·39	4·42	
	1892-93				5·87	2·73	8·60	
Multan	1890-91	4·72	1·17	5·89	5·09	4·60	9·69	
	1891-92				1·68	0·56	2·24	
	1892-93				15·58	2·01	17·59	
Dera Gházi Khan ...	1890-91	6·55	1·99	8·54	1·58	4·39	5·97	
	1891-92				2·16	0·27	2·43	
	1892-93				4·31	3·43	7·74	
Dera Ismail Khan...	1890-91	5·73	2·24	7·97	4·91	7·58	12·49	
	1891-92				4·54	0·28	4·82	
	1892-93				13·11	2·86	15·97	
Montgomery ...	1890-91	9·08	1·68	10·76	8·31	5·34	13·65	
	1891-92				8·06	0·74	8·80	
	1892-93				14·05	3·32	17·37	
Jhang	1890-91	6·82	1·79	8·61	8·76	5·08	13·84	
	1891-92				5·95	0·39	6·34	
	1892-93				16·42	3·19	19·61	
Bannu	1890-91	8·02	3·28	11·30	7·00	7·52	14·52	
	1891-92				5·58	0·54	6·12	
	1892-93				12·75	3·19	15·94	
Shahpur	1890-91	11·04	3·58	14·62	6·39	9·12	15·51	
	1891-92				6·12	0·38	6·50	
	1892-93				16·85	4·38	21·23	
Hissár	1890-91	14·18	2·37	16·55	9·09	3·28	12·37	
	1891-92				7·79	2·61	10·40	
	1892-93				25·19	4·02	29·21	
Ferozepore	1890-91	15·38	2·67	18·05	13·78	7·70	21·48	
	1891-92				6·51	2·89	9·40	
	1892-93				22·63	6·81	29·44	
Pesháwar	1890-91	6·65	5·42	12·07	5·60	15·78	21·38	
	1891-92				3·83	1·95	5·78	
	1892-93				20·61	5·76	26·37	
Kohát	1890-91	11·99	6·31	18·30	11·08	15·51	26·59	
	1891-92				5·52	1·21	6·73	
	1892-93				19·70	5·94	25·64	
Rohtak	1890-91	17·93	2·26	20·19	19·31	4·26	23·57	
	1891-92				13·23	1·63	14·86	
	1892-93				26·94	5·34	32·28	
Lahore	1890-91	14·73	3·07	17·80	22·06	7·89	29·95	
	1891-92				7·31	0·76	7·98	
	1892-93				19·64	7·27	26·91	
Karnál	1890-91	25·70	4·02	29·72	36·55	4·51	41·06	
	1891-92				24·73	1·32	26·05	
	1892-93				35·20	5·15	40·35	
Jhelum	1890-91	16·35	5·49	21·84	29·47	14·72	44·19	
	1891-92				15·55	2·33	17·88	
	1892-93				20·75	11·72	32·47	
Gujránwála ...	1890-91	18·43	4·86	23·29	29·24	11·64	40·88	
	1891-92				7·16	1·57	8·73	
	1892-93				21·26	10·00	31·26	
Gurgáon	1890-91	23·65	2·39	26·04	25·55	3·27	28·82	
	1891-92				27·69	1·51	29·20	
	1892-93				24·04	3·58	27·62	

STATEMENT No. I—*concluded.*

District.	Year.	Average rainfall of past years.			Rainfall of years under report.			Remarks.
		1st April to 30th September.	1st October to 31st March.	Total.	1st April to 30th September.	1st October to 31st March.	Total.	
Amritsar	1890-91	21·33	4·52	25·85	19·88	10·25	30·13	
	1891-92				10·88	2·00	12·88	
	1892-93				24·18	9·54	33·72	
Delhi	1890-91	25·11	2·97	28·08	30·70	2·49	33·19	
	1891-92				32·95	2·01	34·96	
	1892-93				23·98	5·08	29·06	
Jalandhar	1890-91	23·50	4·53	28·03	13·12	10·57	23·69	
	1891-92				10·34	1·26	11·60	
	1892-93				25·81	8·26	34·07	
Ludhiána	1890-91	22·45	4·15	26·60	18·79	10·15	28·94	
	1891-92				13·37	2·75	16·12	
	1892 93				34·47	7·49	41·96	
Ráwalpindi... ...	1890-91	22·32	8·87	31·19	41·10	18·98	60·08	
	1891-92				16·89	2·00	18·89	
	1892-93				20·22	14·08	34·30	
Gujrát	1890-91	19·83	6·52	26·35	34·51	12·34	46·85	
	1891-92				15·21	2·23	17·44	
	1892-93				28·23	8·09	36·32	
Gurdáspur	1890-91	25·52	5·43	30·95	26·30	12·11	38·41	
	1891-92				16·77	4·14	20·91	
	1892-93				38·03	13·76	51·79	
Ambala	1890-91	29·32	3·93	33·25	43·22	7·02	50·24	
	1891-92				30·24	2·97	33·21	
	1892-93				30·39	9·36	39·75	
Siálkot	1890-91	28·62	5·87	34·49	47·67	16·85	64·52	
	1891-92				22·25	3·14	25·39	
	1892-93				33·11	15·28	48·39	
Hoshiárpur... ...	1890-91	28·36	6·06	34·42	28·36	10·46	38·82	
	1891-92				16·15	2·06	18·21	
	1892-93				42·76	12·29	55·05	
Simla	1890-91	55·80	8·42	64·22	65·99	12·11	78·10	
	1891-92				61·03	8·36	69·39	
	1892-93				52·76	17·85	70·61	
Hazára	1890-91	30·02	14·82	44·84	30·72	28·68	59·40	
	1891-92				28·45	11·13	39·58	
	1892-93				29·38	20·86	50·24	
Kángra(Dharmsála)	1890-91	104·64	15·66	120·30	119·80	22·69	142·49	
	1891-92				84·81	6·99	91·80	
	1892-93				123·31	32·32	155·63	

STATEMENT No. II.

Progress Statement of Nurseries in the Districts for the years 1890-91 *to* 1892-93.

1	2	3	4	5	6	7
District.	Year.	Area under nurseries at beginning of the year.	Area added during the year.	Area given up or transferred to groves during the year.	Area remaining at end of the year.	Remarks.
		Acres.	*Acres.*	*Acres.*	*Acres.*	
Muzaffargarh ...	1890-91	1·43	...	...	1·43	
	1891-92	1·43	...	1·43	...	
	1892-93	...	1·25	...	1·25	
Multan ...	1890-91	40·72	5·81	1·23	45·30	
	1891-92	45·30	1·17	0·98	45·49	
	1892-93	45·49	0·75	1·06	45·18	
Dera Gházi Khan ...	1890-91	4·75	0·40	...	5·15	
	1891-92	5·15	...	...	5·15	
	1892-93	5·15	...	...	5·15	
Dera Ismail Khan ..	1890-91	7·81	...	...	7·81	
	1891-92	7·81	0·67	...	8·48	
	1892-93	8·48	2·00	...	10·48	
Montgomery ...	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92					
	1892-93					
Jhang ...	1890-91	0·27	0·50	0·25	0·52	
	1891-92	0·52	0·34	0·31	0·55	
	1892-93	0·55	0·27	0·55	0·27	
Bannu ...	1890-91	0·47	...	0·22	0·25	
	1891-92	0·25	0·23	0·04	0·44	
	1892-93	0·44	0·04	...	0·48	
Shahpur ...	1890-91	29·98	4·68	1·60	33·06	Column 5 includes 0·46 of an acre deducted on account of remeasurement.
	1891-92	33·06	3·40	1·79	34·67	
	1892-93	34·67	1·03	1·22	34·48	
Hissár ...	1890-91	27·20	8·20	22·68	12·72	Column 5 includes 18·02 acres transferred to groves and 4·66 acres due to correction of previous returns.
	1891-92	12·72	275·72	0·65	287·79	
	1892-93	287·79	...	...	287·79	
Ferozepore	1890-91	5·25	...	1·00	4·25	
	1891-92	4·25	1·00	1·00	4·25	
	1892-93	4·25	1·00	2·00	3·25	
Pesháwar ...	1890-91	11·47	0·27	1·12	10·62	
	1891-92	10·62	1·01	2·34	9·29	
	1892-93	9·29	1·75	...	11·04	
Kohát ...	1890-91	0·56	0·25	0·15	0·66	
	1891-92	0·66	0·31	0·26	0·71	
	1892-93	0·71	0·20	0·50	0·41	
Rohtak ...	1890-91	1·41	1·47	0·33	2·55	
	1891-92	2·55	0·47	1·00	2·02	1 acre transferred to groves.
	1892-93	2·02	0·33	0·54	1·81	
Lahore ...	1890-91	4·09	0·46	1·17	3·38	
	1891-92	3·38	5·00	...	8·38	
	1892-93	8·38	...	1·12	7·26	
„ Municipality	1890-91	0·20	...	...	0·20	
	1891-92	0·20	...	...	0·20	
	1892-93	0·20	...	...	0·20	
Karnál ...	1890-91	8·53	...	...	8·53	
	1891-92	8·53	...	...	8·53	
	1892-93	8·53	...	...	8·53	
Jhèlum ...	1890-91	5·78	0·24	...	6·02	
	1891-92	6·02	0·08	...	6·10	
	1892-93	6·10	0·97	...	7·07	
Gujránwála ...	1890-91	...	0·29	...	0·29	
	1891-92	0·29	3·58	0·59	3·28	
	1892-93	3·28	0·03	0·84	2·47	

STATEMENT No. II—*continued.*

1	2	3	4	5	6	7
DISTRICT.	Year.	Area under nurseries at beginning of the year.	Area added during the year.	Area given up or transferred to groves during the year.	Area remaining at end of the year.	REMARKS.
		Acres.	*Acres.*	*Acres.*	*Acres.*	
Gurgáon ...	1890-91	2·09	0·43	0·59	1·93	Column 5 includes 0·50 of an acre transferred to groves.
	1891-92	1·93	0·57	...	2·50	
	1892-93	2·50	0·68	0·07	3·11	
Amritsar ...	1890-91	37·87	0·85	0·15	38·57	
	1891-92	38·57	0·85	0·17	39·25	
	1892-93	39·25	0·20	0·08	39·37	
„ Municipality	1890-91	7·77	1·03	1·46	7·34	
	1891-92	7·34	...	...	7·34	
	1892-93	7·34	...	...	7·34	
Delhi ...	1890-91	2·24	...	1·40	*0·84	* 1·40 acres transferred to groves.
	1891-92	0·84	0·22	0·08	†0·98	†Column 5 includes 0·02 of an acre transferred to groves and 0·06 of an acre given up as nursery.
	1892-93	0·98	1·00	0·30	‡1·68	‡Column 5 includes 0·10 of an acre transferred to groves and 0·20 of an acre given up as nursery.
Jalandhar ...	1890-91	15·10	...	...	15·10	
	1891-92	15·10	0·18	0·47	§14·81	§ Column 5 includes 0·10 of an acre transferred to groves and 0·37 of an acre given up as nursery.
	1892-93	14·81	0·85	...	‖15·66	‖The entry in column 4 represents the area of a grove converted into a nursery.
Ludhiána ...	1890-91	4·31	...	...	4·31	
	1891-92	4·31	1·00	0·52	4·79	
	1892-93	4·79	0·62	...	5·41	
Ráwalpindi ...	1890-91	10·27	0·94	0·25	10·96	
	1891-92	10·96	...	...	10·96	
	1892-93	10·96	0·25	...	11·21	
„ Municipality	1890-91	0·54	0·52	...	1·06	
	1891-92	1·06	...	...	1·06	
	1892-93	1·06	0·50	...	1·56	
Gujrát ...	1890-91	2·12	0·75	...	2·87	
	1891-92	2·87	0·71	...	3·58	
	1892-93	3·58	0·37	0·90	3·05	
Gurdáspur ...	1890-91	5·85	0·23	0·12	5·96	
	1891-92	5·96	0·11	0·60	5·47	
	1892-93	5·47	0·35	0·11	5·71	
Ambala ...	1890-91	...	18·44	...	18·44	
	1891-92	18·44	5·50	...	23·94	
	1892-93	23·94	...	...	23·94	
Siálkot ...	1890-91	18·21	2·64	8·84	12·01	Column 5 includes 5·05 acres transferred to groves.
	1891-92	12·01	0·79	4·80	8·00	
	1892-93	8·00	2·74	2·72	8·02	
Hoshiárpur ...	1890-91	2·77	1·68	...	4·45	
	1891-92	4·45	0·20	...	4·65	
	1892-93	4·65	0·08	...	4·73	
Simla ...	1890-91	4·00	0·95	...	4·95	Column 4 includes 0·08 of an acre previously stocked but not hitherto shown.
	1891-92	4·95	2·38	...	7·33	
	1892-93	7·33	...	1·31	6·02	
Házára ...	1890-91	15·00	0·25	0·50	14·75	
	1891-92	14·75	0·60	0·40	14·95	
	1892-93	14·95	0·12	...	15·07	
Kángra ...	1890-91	6·36	0·66	0·51	6·51	
	1891-92	6·51	0·43	0·47	6·47	
	1892-93	6·47	0·41	1·75	5·13	
„ Municipality	1890-91	3·67	...	...	3·67	
	1891-92	3·67	2·00	...	5·67	
	1892-93	5·67	0·30	0·30	5·67	
Total ...	1890-91	288·09	51·94	43·57	296·46	
	1891-92	296·46	308·52	17·90	587·08	
	1892-93	587·08	18·09	15·37	589·80	

STATEMENT No. II—*continued.*

Progress Statement of Nurseries in the Canal Divisions for the years 1890-91 *to* 1892-93.

1	2	3	4	5	6	7
Canal Division.	Year.	Area under nurseries at beginning of the year.	Area added during the year.	Area given up or transferred to groves during the year.	Area remaining at end of the year.	Remarks.
		Acres.	*Acres.*	*Acres.*	*Acres.*	
Bári Doáb Canal, 1st Division.	1890-91 1891-92 1892-93	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Bári Doáb Canal, 2nd Division.	1890-91	0·37	...	0 37	...	0·37 of an acre transferred to 3rd Division, Bári Doáb Canal.
	1891-92 1892-93	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Bári Doáb Canal, 3rd Division.	1890-91	...	0 37	0·37	...	0·37 of an acre received by transfer from 2nd Division, Bári Doáb Canal.
	1891-92	...	0·50	...	0·50	
	1892-93	0·50	...	0·50	...	
Upper Sutlej Division, Inundation Canals.	1890-91 1891-92 1892-93	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Multan Canals Division.	1890-91	1·00	9·58	4·04	6·54	Column 4 includes 3·50 acres omitted in previous returns. * Column 5 includes 1 acre transferred to Plantations and 11·90 acres given up.
	1891-92	6·54	12·10	12·90	*5·74	
	1892-93	5·74	14·49	6·61	13·62	
Dera Gházi Khan Division, Indus Canals.	1890-91	0·49	0·10	0·44	0·15	
	1891-92	0·15	0·19	...	0·34	
	1892-93	0·34	0·19	0·09	0·44	
Muzaffargarh Canal Division.	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92	...	1·15	...	1·15	
	1892-93	1·15	...	...	1·15	
Western Jumna Canal, Karnál Division.	1890-91	12·10	1·44	6·22	7·32	Nursery given up not being required.
	1891-92	7·32	1·83	3·76	5·39	
	1892-93	5·39	3·84	5·97	3·26	
Western Jumna Canal, Delhi Division.	1890-91	0·07	6·67	0·03	6·71	
	1891-92	6·71	0·83	0·04	7·50	
	1892-93	7·50	1·25	6·94	1·81	Column 5 includes 6·53 acres transplanted and 0·41 of an acre transferred to Plantations.
Western Jumna Canal, Hissár Division.	1892-93	...	1·25	0 25	1·00	
Sirhind Canal, Ferozepore Division.	1890-91	1·25	3·50	0·25	4·50	0·25 of an acre transferred to Plantations. †0·25 of an acre received by transfer from Plantations. ‡Column 5 includes 3 acres transferred to Plantations.
	1891-92	4·50	0·35	0·32	†4·53	
	1892-93	4·53	2·40	5·07	‡1·86	
Sirhind Canal, Ludhiána Division.	1890-91	10·22	8·90	9·01	10·11	
	1891-92	10·11	7·09	0·50	16·70	
	1892-93	16·70	2·94	2·13	17·51	
Sirhind Canal, Patiála Division.	1890-91	21·46	0·77	6·42	15·81	
	1891-92	15·81	...	2·22	13·59	
	1892-93	13·59	...	5·80	7·79	Column 5 includes 5·80 acres transferred to Plantations.
Chenáb Canal, 1st Division.	1890-91	...	1·13	...	1·13	
	1891-92	1·13	...	...	1·13	
	1892-93	1·13	7·50	5·50	3·13	
Chenáb Canal, 2nd Division.	1890-91	1·25	0·21	1·25	0·21	
	1891-92	0·21	9·88	0·21	9·88	
	1892-93	9·88	4·65	...	14·53	
Swát River Canal Division.	1890-91	...	0·48	...	0·48	
	1891-92	0·48	...	...	0·48	
	1892-93	0·48	...	...	0·48	
Total ...	1890-91	48·21	33·15	28·40	52·96	
	1891-92	52·96	33·92	19·95	66·93	
	1892-93	66·93	38·51	38·86	66·58	

STATEMENT No. II—*concluded.*

Progress Statement of Nurseries in the Provincial Divisions for the years 1890-91 *to* 1892-93.

1	2	3	4	5	6	7
PROVINCIAL DIVISION.	Year.	Area under nurseries at beginning of the year.	Area added during the year.	Area given up or transferred to groves during the year.	Area remaining at end of the year.	REMARKS.
		Acres.	*Acres.*	*Acres.*	*Acres.*	
Pesháwar Division	1890-91	1·90	0·30	1·58	0·62	
	1891-92	0·62	1·56	0·21	1·97	Column 4 includes 0·06 of an acre omitted in previous returns and column 5 includes 0·19 of an acre due to correction of previous years' returns.
	1892-93	1·97	0·39	0·04	2·32	
Ráwalpindi Division	1890-91	1·42	0·60	0·37	1·65	
	1891-92	1·65	...	0·70	0·95	Column 5 includes 0·70 of an acre transferred to Gujránwála Division.
	1892-93	0·95	0·54	...	1·49	
Kohát North-West Frontier Road Division.	1890-91	6·57	0·03	...	6·60	
	1891-92	6·60	...	6·60	...	
	1892-93	...	...	...	...	
Gujránwála Independent Sub-Division.	1890-91	0·14	...	...	0·14	
	1891-92	0·14	6·64	0·10	6·68	Column 4 includes 0·70 of an acre received by transfer from Ráwalpindi Division.
	1892-93	6·68	0·05	0·10	6·63	
Jalandhar Division	1890-91	3·20	2·08	1·40	3·88	
	1891-92	3·88	1·41	0·90	4·39	
	1892-93	4·39	5·27	2·61	7·05	
Simla Division ...	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92					
	1892-93					
Ambala Division ...	1890-91	1·74	0·65	2·39	...	
	1891-92	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1892-93					
Delhi Division ...	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92					
	1892-93					
Dera Ismail Khan Division.	1890-91	2·09	...	...	2·09	
	1891-92	2·09	0·04	...	2·13	
	1892-93	2·13	0·12	0·55	1·70	
Dera Gházi Khan Division.	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92	...	0·27	...	0·27	
	1892-93	0·27	...	0·23	0·04	
Lahore Division ...	1890-91	1·31	1·67	1·05	1·93	1·05 acres include 0·35 of an acre transferred to Amritsar Provincial Division.
	1891-92	1·93	3·88	1·15	4·66	
	1892-93	4·66	1·24	2·84	3·06	
Amritsar Division	1890-91	...	0·53	...	0·53	Column 4 includes 0·35 of an acre received by transfer from the Lahore Provincial Division.
	1891-92	0·53	0·31	0·35	0·49	
	1892-93	0·49	0·23	0·13	0·59	
Multan Division ...	1890-91	...	0·07	...	0·07	
	1891-92	0·07	...	...	0·07	
	1892-93	0·07	1·14	0·18	1·03	
Total ...	1890-91	18·37	5·93	6·79	17·51	
	1891-92	17·51	14·11	10·01	21·61	
	1892-93	21·61	8·98	6·68	23·91	

STATEMENT No. III.

Progress Statement of Plantations in the Districts for the years 1890-91 *to* 1892-93.

1	2	3	4	5	6	7	8
District.	Year.	Area taken up for plantation at the beginning of the year.	Area successfully stocked at beginning of year.	Area sown or planted during the year.	Area of failures during the year.	Area stocked at end of the year.	Remarks.
		Acres.	*Acres.*	*Acres.*	*Acres.*	*Acres.*	
Muzaffargarh ...	1890-91 1891-92 1892-93	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Multan	1890-91 1891-92 1892-93	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Dera Gházi Khan	1890-91 1891-92 1892-93	135·00 1,677·00 1,677·00	135·00 135·00 60·00	... *a* 35·00 ...	... *a* 110·00 ...	135·00 60·00 60·00	*a* The entries in columns 5 and 6 are due to correction of previous returns.
Dera Ismail Khan	1890-91 1891-92 1892-93	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Montgomery ...	1890-91 1891-92 1892-93	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Jhang	1890-91 1891-92 1892-93	261·03 375·74 359·00	261·03 261·03 359·00	... *b* 114·71 ...	... *b* 16·74 *c* 114·71	261·03 359·00 244·29	*b* Column 5 includes 114·71 acres previously stocked but not hitherto shown, and 16·74 acres shown in column 6 were washed away by the river. *c* 114·71 acres in column 6 are due to the correction of error made in 1891-92.
Bannu	1890-91 1891-92 1892-93	1,200·00 1,200·00 1,200·00	1,150·00 1,200·00 1,200·00	*d* 50·00	... ...	1,200·00 1,200·00 1,200·00	*d* 50 acres added to the shisham forest near Kuwar Mushani.
Shahpur	1890-91 1891-92 1892-93	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil*	
Hissár	1890-91 1891-92 1892-93	21·37 117·66 117·66	21·37 11·30 73·66	... 106·36 ...	10·07 44·00 ...	11·30 73·66 73·66	
Ferozepore ...	1890-91 1891-92 1892-93	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Peshawar ...	1890-91 1891-92 1892-93	*Nil.*	*Nil.*	*Nil.*	*Nil*	*Nil.*	
Kohát	1890-91 1891-92 1892-93	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Rohtak	1890-91 1891-92 1892-93	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Lahore	1890-91 1891-92 1892-93	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Karnál	1890-91 1891-92 1892-93	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Jhelum	1890-91 1891-92 1892-93	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Gujránwála ...	1890-91 1891-92 1892-93	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	

STATEMENT No. III—continued.

Progress Statement of Plantations in the Districts for the years 1890-91 *to* 1892-93—concluded.

1	2	3	4	5	6	7	8
DISTRICT.	Year.	Area taken up for plantation at the beginning of the year.	Area successfully stocked at beginning of year.	Area sown or planted during the year.	Area of failures during the year.	Area stocked at end of the year.	REMARKS.
		Acres.	*Acres.*	*Acres.*	*Acres.*	*Acres.*	
Gurgáon ...	1890-91	2,156·34	12·81	*a* 113·00	13·00	112·81	*a* Column 5 includes 93 acres previously stocked, but not hitherto shown.
	1891-92	2,156·34	112·81	4·00	3·00	113·81	
	1892-93	2,156·34	113·81	2·00	1·00	114·81	
Amritsar ...	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92						
	1892-93						
Do. Municipality.	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*b* Omitted from previous year's returns.
	1891-92	7·00	...	*b* 7·00	...	7·00	
	1892-93	7·00	7·00	...	...	7·00	
Delhi ...	1890-91	998·61	578·00	*c* 71·26	45·27	603·99	*c* Kikar seed was sown in the Tilauri Rakh but failed in 45 acres.
	1891-92	1,937·14	603·99	*d* 986·18	46·97	1,543·20	
	1892-93	998·61	604·67	*e* 48·33	41·23	611·77	
Do. Municipality	1892-93	938·73	938·53	*f* 0·20	...	938·73	*d* Column 5 includes 938·53 acres of Bela plantation previously stocked but hitherto shown. Willow cuttings were planted in 45 acres in the Tilauri Rakh but did not succeed owing to floods.
Jalandhar ...	1890-91	190·69	159·68	15·50	10·00	165·18	
	1891-92	165·18	165·18	*g* 26·17	28·15	163·20	
	1892-93	163·20	163·20	*h* 1·75	0·95	164·00	
Ludhiána ...	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*e* Seeds were sown in 45 acres of the Tilauri Rakh but failed in 40 acres.
	1891-92						
	1892-93						
Ráwalpindí ...	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*f* The entry in column 5 is due to omission from previous years.
	1891-92						
	1892-93						
Gujrát ...	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*g* Column 5 includes 15·50 acres sown during the year and 10·67 acres due to correction of area by land revenue settlement. Column 6 includes 15·50 acres washed away by the river and 5·17 excluded by correction of area at land revenue settlement.
	1891-92						
	1892-93	...	...	0·10	...	0·10	
Gurdáspur ...	1890-91	26·74	25·18	...	...	25·18	
	1891-92	26·74	25·18	...	...	25·18	
	1892-93	26·74	25·18	0·37	...	25 55	
Ambala ...	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92						
	1892-93						
Siálkot ...	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92						
	1892-93						
Hoshiárpur ...	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*h* The entry in column 5 is due to omissions from previous years. Column 6 represents the area washed away by the river.
	1891-92						
	1892-93						
Simla ...	1890-91	58·50	51·50	8·85	3·15	57·20	
	1891-92	101·50	57·20	15·30	15·00	57·50	
	1892-93	57·50	57·50	1·00	6·00	52·50	
Hazára ...	1890-91	41·63	28·25	1·25	0·45	29·05	
	1891-92	41·63	29·05	0·75	0·55	29 25	
	1892-93	41·63	29·25	0·25	...	29·50	
Kángra Municipality.	1890-91	58·13	58·13	...	...	58·13	
	1891-92	58·13	58·13	...	...	58·13	
	1892-93	58·13	58·13	1·40	0·30	59·23	
Total ...	1890-91	5,148·04	2,480·95	259·86	81·94	2,658·87	
	1891-92	7,864·06	2,658·87	1,295·47	264·41	3,689·93	
	1892-93	7,801·54	3,689·93	55·40	164·19	3,581·14	

STATEMENT No. III—continued.

Progress Statement of Plantations in the Canal Divisions for the years 1890-91 *to* 1892-93.

1	2	3	4	5	6	7	8
Canal Division.	Year.	Area taken up for plantation at the beginning of the year.	Area successfully stocked at beginning of year.	Area sown or planted during the year.	Area of failures during the year.	Area stocked at end of the year.	Remarks.
		Acres.	*Acres.*	*Acres.*	*Acres.*	*Acres.*	
Bári Doáb Canal, 1st Division.	1890-91	3,564·00	1,810·00	68·18	86·67	1,791·51	
	1891-92	3,564·00	1,791·51	*a* 84·26	...	1,875·77	
	1892-93	3,564·00	1,875·77	27·72	...	1,903·49	
Bári Doáb Canal, 2nd Division.	1890-91	*2,373·00	2,373·00	...	*b* 1,047·41	1,325·59	
	1891-92	1,451·48	1,325·59	*c* 125·89	...	1,451·48	
	1892-93	1,451·48	1,451·48	3·49	*d* 26·66	1,428·31	
Bári Doáb Canal, 3rd Division.	1890-91	910·69	...	*e* 910·69	...	910·69	
	1891-92	999·35	910·69	*f* 88·66	...	999·35	
	1892-93	1,014·85	999·35	150·50	46·50	968·35	
Upper Sutlej Division, Inundation Canals.	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92	...	...	*g* 45·01	...	45·01	
	1892-93	45·01	45·01	...	...	45·01	
Multan Canals Division.	1890-91	41·60	...	*h* 21·23	...	21·23	
	1891-92	197·50	21·23	*i* 164·00	...	185·23	
	1892-93	185·23	185·23	...	10·46	174·77	
Dera Gházi Khan Division, Indus Canals.	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92	...	...	*j* 20·68	...	20·68	
	1892-93	20 68	20·68	...	...	20·68	
Muzaffargarh Canals Division.	1890-91 1891-92 1892-93	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Western Jumna Canal, Karnál Division.	1890-91	10·00	6·65	1·80	0·22	8·23	
	1891-92	1,054·89	8·23	*k* 1,059·31	0·60	1,066·94	
	1892-93	1,112·65	1,066·94	230·65	*l* 178·38	1,119·21	
Western Jumna Canal, Delhi Division.	1890-91	692·14	669·96	22·18	9·48	682·66	
	1891-92	682·66	682·66	*m* 152·40	0·12	834·94	
	1892-93	2,143·94	834·94	*n* 795·17	*o* 277·32	1,352·79	
Western Jumna Canal, Hissár Division.	1892-93	...	...	35·00	...	35·00	
Sirhind Canal, Ferozepore Division.	1890-91	941·67	941·67	*p* 460·37	23·00	1,379·04	
	1891-92	3,278·00	1,379·04	84·70	*q* 276·15	1,187·59	
	1892-93	*r* 4,117·68	1,187·59	817·00	20·00	1,984·59	
Sirhind Canal, Ludhiána Division.	1890-91	5,999·00	4,250·52	194·52	*s* 513·73	3,931·31	
	1891-92	6,608·00	3,931·31	*t* 381·14	8·01	4,304·44	
	1892-93	6,608·00	4,304·44	144·78	10·70	4,438·52	
Sirhind Canal, Patiála Division.	1890-91	2,574·00	708·00	*u* 1,176·00	3·00	1,881·00	
	1891-92	2,971·53	1,881·00	*v* 413·28	3·87	2,290·41	
	1892-93	3,881·88	2,290·41	*w* 194·71	...	2,485·12	
Chenáb Canal, 1st Division.	1890-91	1·18	...	1·18	...	1·18	
	1891-92	1·18	1·18	209·16	1·50	208·84	
	1892-93	432·23	208·84	*x* 362·23	*x* 168·68	402·39	
Chenáb Canal, 2nd Division.	1890-91	183·01	183·01	...	...	183·01	
	1891-92	183·01	183·01	*y* 23·30	38 87	167·44	
	1892-93	167·44	167·44	17·99	*z* 167·07	18·36	
Swát River Canal Division.	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92	...	...	*aa* 107·80	...	107·80	
	1892-93	107·80	107·80	...	...	107·80	
Total ...	1890-91	17,290·29	10,942·81	2,856·15	1,683·51	12,115·45	
	1891-92	20,991·60	12,115·45	2,959·59	329·12	14,745·92	
	1892-93	24,852·87	14,745·92	2,644·24	905·77	16,484·39	

* The figure given in the annual statement for 1890-91 is not correct. Correct area has now been entered.

a. Column 5 includes 24·59 acres received by transfer from groves.

b. Column 6 includes 859·69 acres transferred to 3rd Division, Bári Doáb Canal, 13·64 acres have been cut and are proposed to be restocked. 174·08 acres failed owing to heavy rains.

c. Column 5 includes 105·62 acres received by transfer from groves and 20·27 acres sown during 1891-92.

d. During 1892-93, 3·49 acres, which were thinly stocked, were cleared of old trees and resown with shisham. 23·17 acres were also cleared of standing trees.

e. Column 5 includes 859·69 acres received by transfer from 2nd Division, Bári Doáb Canal.

f. Column 5 includes 57·66 acres received by transfer from groves.

g. Received by transfer from groves.

h. 21·23 acres are omissions from previous years.

i. The entry in column 5 includes 156·50 acres received by transfer from groves and 1 acre transferred from nurseries.

j. The entry in column 5 is due to correction of previous returns.

k. Column 5 includes 1,044·89 acres received by transfer from groves.

l. The area in column 6 (178·38 acres) has been transferred to the charge of the civil authorities.

m. Column 5 includes 139·56 acres received by transfer from groves.

n. The entry in column 5 includes 733·26 acres due to errors adjusted and transfers from nurseries, groves and avenues as well as 61·91 acres newly planted.

o. Column 6 includes 248·11 acres due to adjustment of previous errors and 29·21 acres as failures.

p. Column 5 includes 134·70 acres and 0·25 of an acre transferred from groves and nurseries respectively.

q. Column 6 includes 0·25 of an acre transferred to nurseries and 20 acres due to correction of previous returns. Out of 255·90 acres of failures 195 acres were in the Abohar Branch, where owing to heavy growth of jungle and cattle-trespass almost all the young trees failed.

r. During 1892-93 areas taken up for plantations have been correctly measured.

s. The entry in column 6 is partly due to adjustment of areas after more careful measurement.

t. In 1891-92 column 5 includes 285·38 acres due to the correction of errors in previous returns.

u. The entry in column 5 includes 1,166·10 acres due to the correction of errors in previous returns.

v. Column 5 includes 15·75 acres sown or planted during the year and 397·53 acres received by transfer from groves.

w During 1892-93 the entry in column 5 includes 5·80 acres transferred from nurseries and 105·60 acres due to errors in previous returns.

x. Column 5 includes 161·24 acres received by transfer from Chenab Canal, 2nd Division. 156 acres resown included in columns 5 and 6.

y. Column 5 includes 5 acres received by transfer from groves.

z. Column 6 includes 161·24 acres transferred to 1st Division, Chenab Canal.

aa. Column 5 includes 98 acres received by transfer from groves and 9·8 acres sown or planted during the year.

STATEMENT No. III—concluded.

Progress Statement of Plantations in the Provincial Divisions for the years 1890-91 to 1892-93.

1	2	3	4	5	6	7	8
PROVINCIAL DIVISION.	Year.	Area taken up for plantation at the beginning of the year.	Area successfully stocked at beginning of year.	Area sown or planted during the year.	Area of failures during the year.	Area stocked at end of the year.	REMARKS.
		Acres.	*Acres.*	*Acres.*	*Acres.*	*Acres.*	
Peshâwar Division	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92						
	1892-93						
Râwalpindi Division.	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92						
	1892-93						
Kohât, N.-W. F. Road Division.	1890-91	1·84	...	1·25	0·09	1·16	
	1891-92	1·16	1·16	0·33	1·49	...	
	1892-93	...	...	...	...	...	
Gujrânwâla Independent Sub-Division.	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92						
	1892 93						
Jalandhar Division.	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92						
	1892-93						
Simla Division ...	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92						
	1892-93						
Ambala Division	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92						
	1892 93						
Delhi Division ...	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92						
	1892-93						
Dera Ismail Khan Division.	1890-91	207·96	155·97	0·50	...	156·47	
	1891-92	207·96	156·47	...	0·75	155·72	
	1892-93	207·96	155·72	2·50	0·80	157·42	
Dera Ghâzi Khan Division.	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92						
	1892-93						
Lahore Division...	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92						
	1892-93						
Amritsar Division	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92						
	1892-93						
Multan Division..	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92						
	1892-93						
Total ...	1890-91	209·80	155·97	1·75	0·09	157·63	
	1891-92	209·12	157·63	0·33	2·24	155·72	
	1892-93	207·96	155·72	2·50	0·80	157·42	

STATEMENT No. IV.

Progress Statement of Groves in the Districts for the years 1890-91 *to* 1892-93.

1	2	3	4	5	6	7
District.	Year.	Area of groves at the beginning of the year.	Area planted or transferred from nurseries during the year.	Area of failures during the year.	Area stocked with trees or plants alive at end of the year.	Remarks.
		Acres.	*Acres.*	*Acres.*	*Acres.*	
Muzaffargarh ...	1890-91	229·31	2·67	...	231·98	
	1891-92	231·98	...	...	231·98	
	1892-93	231·98	...	...	231·98	
Multan ...	1890-91	47·71	...	*a* 13·14	34·57	*a*. Column 5 includes 13·13 acres sold by public auction and 0·01 of an acre as failure.
	1891-92	34·57	...	...	34·57	
	1892-93	34·57	...	13·19	21·38	
Dera Gházi Khan...	1890-91	10·00	...	...	10·00	
	1891-92	10·00	...	...	10·00	
	1892-93	10·00	...	...	10·00	
Dera Ismail Khan ..	1890-91	16·00	...	...	16·00	
	1891-92	16·00	2·00	0·50	17·50	
	1892-93	17·50	...	...	17·50	
Montgomery ...	1890-91	746·00	...	...	746·00	
	1891-92	746·00	...	...	746·00	
	1892-93	746·00	...	...	746·00	
Jhang ...	1890-91	26·56	0·10	...	26·66	
	1891-92	26·66	...	...	26·66	
	1892-93	26·66	0·87	*b* 1·70	25·83	*b*. Transferred to Multan Provincial Works Division.
„ Municipality...	1890-91	4·09	...	...	4·09	
	1891-92	4·09	...	...	4·09	
	1892-93	4·09	...	...	4·09	
Bannu ...	1890-91	1·75	...	...	1·75	
	1891-92	1·75	...	0·19	1·56	
	1892-93	1·56	0·37	...	1·93	
Shahpur ...	1890-91	550·73	*c* 124·62	6·72	668·63	*c*. Column 4 includes 0·50 of an acre added owing to re-measurement.
	1891-92	668·63	234·53	17·28	885·88	
	1892-93	885·88	*d* 108·50	10·28	984·10	*d*. The large area on the Shahpur-Sáhiwál road to which canal irrigation has lately been extended has been planted during 1892-93 with shisham and kíkar.
Hissár ...	1890-91	116·50	16·02	1·72	132·80	
	1891-92	132·80	28·83	...	161·63	
	1892-93	161·63	...	...	161·63	
„ Municipality...	1890-91	26·04	...	...	26·04	
	1891-92	26·04	...	...	26·04	
	1892-93	26·04	1·75	...	27·79	
Ferozepore ...	1890-91	458·54	3·00	...	461·54	
	1891-92	461·54	1·00	...	462·54	
	1892-93	462·54	3·00	...	465·54	
Peshawar ...	1890-91	16·68	0·75	0·25	17·18	
	1891-92	17·18	0·59	0·12	17·65	
	1892-93	17·65	3·00	...	20·65	
„ Municipality...	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92					
	1892-93					
Kohát ...	1890-91	11·45	0·52	0·11	11·86	
	1891-92	11·86	1·81	1·39	12·28	
	1892-93	12·28	2·75	1·25	13·78	
Rohtak ...	1890-91	542·94	...	...	542·94	
	1891-92	542·94	*e* 1·00	...	543·94	*e* 1 acre transferred from nurseries.
	1892-93	543·94	...	...	543·94	
Lahore ...	1890-91	14·67	...	...	14·67	
	1891-92	14·67	1·25	...	15·92	
	1892-93	15·92	...	...	15·92	
Karnál ..	1890-91	312·04	...	...	312·04	
	1891-92	312·04	...	...	312·04	
	1892-93	312·04	*f* 5·33	...	317·37	*f* Of these 3·13 acres have been planted with forest and fruit trees and 2·20 acres with mango and jamán trees.

STATEMENT No. IV—continued.

Progress Statement of Groves in the District for the years 1890-91 *to* 1892-93.

1	2	3	4	5	6	7
District.	Year.	Area of groves at the beginning of the year.	Area planted or transferred from nurseries during the year.	Area of failures during the year.	Area stocked with trees or plants alive at end of the year.	Remarks.
		Acres.	*Acres.*	*Acres.*	*Acres.*	
Jhelum ...	1890-91	5·62	...	...	5·62	
	1891-92	5·62	...	...	5·62	
	1892-93	5·62	...	...	5·62	
Gujránwála ...	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92					
	1892-93					
Gurgáon ..	1890-91	285·08	*a* 0·50	...	285·58	*a*. Transferred from nurseries.
	1891-92	285·58	0·01	...	285·59	
	1892-93	285·59	0·06	0·26	285·39	
Amritsar ..	1890-91	3·12	0 25	...	3·37	
	1891-92	3·37	...	...	3·37	
	1892-93	3·37	...	...	3·37	
Delhi ...	1890-91	10·67	*b* 1·40	...	12·07	*b*. 1·40 acres transferred from nurseries.
	1891-92	12·07	*c* 0·02	...	12·09	*c*. 0·02 of an acre transferred from nurseries.
	1892-93	12·09	*d* 2·52	...	14·61	*d*. Column 4 includes 0·10 of an acre received by transfer from nurseries and 1·42 acres excluded on account of omissions in previous returns.
Jalandhar ...	1890-91	4·79	...	...	4·79	
	1891-92	4·79	*e* 0·37	2·50	2·66	
	1892-93	2 66	3·50	*f* 0·85	5·31	
Ludhiána ...	1890-91	352·59	...	...	352·59	*e*. Column 4 includes 0·10 acres received by transfer from nurseries and 0·27 of an acre due to correction of area by land revenue settlement. The entry in column 5 represents the area of two groves sold during the year.
	1891-92	352·59	...	...	352·59	
	1892-93	352·59	...	...	352·59	
Ráwalpindi ...	1890-91	358 05	1 72	1·06	358·71	
	1891-92	358·71	0·62	...	359·33	
	1892-93	359·33	0·62	...	359·95	
„ Municipality	1890-91	20·29	...	...	20·29	
	1891-92	20·29	...	...	20·29	
	1892-93	20·29	...	...	20·29	
Gujrát ...	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*f*. Column 5 represents the area of a grove converted into a nursery, the old trees having been cut and sold.
	1891-92					
	1892-93					
Gurdáspur ...	1890-91	4·88	...	...	4·88	
	1891-92	4·88	...	...	4·88	
	1892-93	4·88	...	...	4·88	
Ambala ...	1890 91	5·50	92·90	5·50	92 90	
	1891-92	92·90	25·00	5·00	112·90	
	1892-93	112·90	...	...	112·90	
Siálkot ...	1890-91	7·05	*g* 5·05	1·03	11·07	*g*. The area in column 4 has been received by transfer from nurseries.
	1891-92	11·07	1·12	...	12·19	
	1892-93	12·19	1·05	0·09	13·15	
Hoshiárpur ...	1890-91	15·23	...	...	15·23	
	1891-92	15·23	...	...	15·23	
	1892-93	15·23	...	...	15·23	
Simla ...	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1892-93	...	13·62	...	13·62	
Hazára ...	1890-91	33·75	1·25	0·75	34 25	
	1891-92	34·25	0·60	0·20	34·65	
	1892-93	34·65	...	...	34·65	
Kángra ...	1890-91	19·05	...	...	19·05	
	1891-92	19 05	...	...	19·05	
	1892-93	19·05	...	...	19·05	
„ Municipality	1890-91	*Nil.*	*Nil.*	*Nil*	*Nil.*	
	1891-92					
	1892-93					
Total ...	1890-91	4,256·68	252·75	30·28	4,479·15	
	1891-92	4,479·15	298·75	27·18	4,750·72	
	1892-93	4,750·72	146·94	27·62	4,870·04	

STATEMENT No. IV—continued.

Progress Statement of Groves in the Canal Divisions for the years 1890-91 *to* 1892-93.

1	2	3	4	5	6	7
Canal Division.	Year.	Area of groves at the beginning of the year.	Area planted or transferred from nurseries during the year.	Area of failures during the year.	Area stocked with trees or plants alive at end of the year.	Remarks.
		Acres.	*Acres.*	*Acres.*	*Acres.*	
Bári Doáb Canal, 1st Division.	1890-91	21·59	3·00	...	24·59	
	1891-92	24·59	...	*a* 24·59	...	*a* Transferred to plantations.
	1892-93	...	...	...	...	
Bári Doáb Canal, 2nd Division.	1890-91	162·70	0·18	*b* 57·26	105·62	*b* 57·26 acres transferred to 3rd Division, Bári Doáb Canal.
	1891-92	105·62	...	*c* 105·62	...	*c* Transferred to plantations.
	1892-93	...	...	...	...	
Bári Doáb Canal, 3rd Division.	1890-91	...	*d* 57·86	0·20	57·66	*d* Column 4 includes 57·26 acres received by transfer from 2nd Division, Bári Doáb Canal.
	1891-92	57·66	...	*e* 57·66	...	*e* Transferred to plantations.
	1892-93	...	...	...	...	
Upper Sutlej Division, Inundation Canals.	1890-91	43·11	1·90	...	45·01	*f* Transferred to plantations.
	1891-92	45·01	...	*f* 45·01	...	
	1892-93	...	...	...	...	
Multan Canals Division.	1890-91	135·00	*g* 21·50	...	156·50	*g* Column 4 includes 11·50 acres omitted in previous returns.
	1891-92	156·50	...	*h* 156·50	...	*h* Transferred to plantations.
	1892-93	...	...	...	...	
Dera Gházi Khan, Indus Canal.	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92					
	1892-93					
Muzaffargarh Canals Division.	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92					
	1892-93					
W.-J. Canal, Karnál Division.	1890-91	1,044·89	...	...	1,044·89	
	1891-92	1,044·89	...	*i* 1,044·89	...	*i* Transferred to plantations.
	1892-93	...	...	...	...	
W.-J. Canal, Delhi Division.	1890-91	131·81	7·95	0·20	139·56	
	1891-92	139·56	...	*j* 139·56	...	*j* Transferred to plantations.
	1892-93	...	...	...	...	
W.-J. Canal, Hissár Division.	1892-93	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Sirhind Canal, Ferozepore Division.	1890-91	134·70	...	*k* 134·70	...	*k* Transferred to plantations.
	1891-92	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1892-93	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Sirhind Canal, Ludhiána Division.	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92					
	1892-93					
Sirhind Canal, Patiála Division.	1890-91	1,187·00	53·42	842·89	397·53	Plantations and groves were mixed up, the errors are now corrected.
	1891-92	397·53	...	*l* 397·53	...	*l* Transferred to plantations.
	1892-93	...	...	...	...	
Chenáb Canal, 1st Division.	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1892-93	...	...	...	...	
Chenáb Canal, 2nd Division.	1890-91	5·00	...	...	5·00	
	1891-92	5·00	...	*m* 5·00	...	*m* Transferred to plantations.
	1892-93	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
Swát River Canal Division.	1890-91	98·00	...	...	98·00	
	1891-92	98·00	...	*n* 98·00	...	*n* Transferred to plantations.
	1892-93	...	...	...	...	
Total ...	1890-91	2,963·80	145·81	1,035·25	2,074·36	
	1891-92	2,074·36	...	2,074·36	...	
	1892-93	...	...	...	...	

STATEMENT No. IV—concluded.

Progress Statement of Groves in the Provincial Divisions for the years 1890-91 *to* 1892-93.

1	2	3	4	5	6	7
Provincial Division.	Year.	Area of groves at the beginning of the year.	Area planted or transferred from nurseries during the year.	Area of failures during the year.	Area stocked with trees or plants alive at end of the year.	Remarks.
		Acres.	*Acres.*	*Acres.*	*Acres.*	
Pesháwar Division	1890-91	1·74	...	1·68	0·06	
	1891-92	0·06	*a* 127·32	...	127·38	*a.* The entry in column 4 is due to the correction of previous returns.
	1892-93	127·38	0·04	...	127·42	
Ráwalpindi Division	1890-91	438·00	13·17	*b* 148·68	302·49	*b.* The entry in column 5 is due to the correction of previous returns.
	1891-92	302·49	...	*c* 74·58	227·91	*c.* 74·58 acres transferred to Gujránwála Division.
	1892-93	227·91	1·50	0·58	228·83	
Kohát North-West Frontier Road Division.	1890-91	2·44	2·34	1·21	3·57	
	1891-92	3·57	...	3·57	...	
	1892-93	...	1·40	0·22	1·18	
Gujránwála Independent Sub-Division.	1890-91	189·83	...	...	189·83	
	1891-92	189·83	*d* 74·58	...	264·41	*d.* Column 4 includes 74·58 acres received by transfer from Ráwalpindi Division.
	1892-93	264·41	...	2·00	262·41	
Jullundur Division	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92	*Nil.*	*e* 496·81	...	496·81	*e.* The area in column 4 was abandoned by the Police and transferred to this Department.
	1892-93	496·81	...	0·40	496·41	
Simla Division ...	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92					
	1892-93					
Ambala Division ...	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92					
	1892-93					
Delhi Division ...	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92					
	1892-93					
Dera Ismail Khan Division.	1890-91	2·00	...	...	2·00	
	1891-92	2·00	8·95	...	10·95	
	1892-93	10·95	...	0·59	10·36	
Dera Gházi Khan Division.	1890-91	2·07	1·57	0·84	2·80	
	1891-92	2·80	0·15	0·04	2·91	
	1892-93	2·91	...	...	2·91	
Lahore Division ...	1890-91	23·00	...	...	23·00	
	1891-92	23·00	...	0·50	22·50	
	1892-93	22·50	...	...	22·50	
Amritsar Division	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92					
	1892-93					
Multan Division ...	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92	*Nil,*	*Nil.*	*Nil.*	*Nil.*	
	1892-93	*Nil.*	1·70.	*Nil.*	1·70	
Total ...	1890-91	659·08	17·08	152·41	523·75	
	1891-92	523·75	707·81	78·69	1,152·87	
	1892-93	1,152·87	4·64	3·79	1,153·72	

STATEMENT No. V.

Progress Statement of Avenues in the Districts of the Punjab for the years 1890-91 *to* 1892-93.

1	2	3	4	5	6	7	8
DISTRICT.	Year.	Length of roads and canals suitable for avenues.	Length of roads and canals fully stocked with trees at beginning of year.	Length of roads and canals planted during the year.	Length of roads and canals which have failed during the year.	Length of roads and canals fully stocked with trees or plants alive at end of the year.	REMARKS.
		Miles.	*Miles.*	*Miles.*	*Miles.*	*Miles.*	
ARID.							
Muzaffargarh ...	1890-91	294·35	100·80	2·00	...	102·80	
	1891-92	294·35	102·80	0·85	0·17	103·48	
	1892-93	295·85	103·48	3·88	0·09	107·27	
Multan ...	1890-91	1,231·24	193·13	4·43	1·33	196·23	
	1891-92	1,231·24	196·23	12·90	3·29	205·84	
	1892-93	1,231·24	205·84	33·52	25·92	213·44	
Dera Gházi Khan	1890-91	114·00	24·75	..	...	24·75	
	1891-92	114·00	24·75	...	...	24·75	
	1892-93	114·00	24·75	2·00	...	26·75	
Dera Ismail Khan	1890-91	206·00	28·00	...	...	28·00	
	1891-92	206·00	28·00	15·00	8·00	35·00	
	1892-93	206·00	35·00	19·00	10·00	44·00	
Montgomery ...	1890-91	250·00	133·00	...	...	133·00	
	1891-92	250·00	133·00	...	...	133·00	
	1892-93	250·00	133·00	...	...	133·00	
Jhang ...	1890-91	246·49	37·36	2·35	0·25	39·46	
	1891-92	246·49	39·46	0·21	0·22	39·45	
	1892-93	223·49	39·45	3·26	*a* 8·36	34·35	*a* Includes 6 miles transferred to Provincial Works.
„ Municipality	1890-91	48·09	21·69	0·13	...	21·82	
	1891-92	48·09	21·82	...	...	21·82	
	1892-93	48·09	21·82	...	...	21·82	
Bannu ...	1890-91	172·04	71·23	...	...	71·23	
	1891-92	171·86	71·23	3·03	7·50	66·76	
	1892-93	171·86	66·76	2·47	...	69·23	
Shahpur ...	1890-91	546·33	402·28	*b* 67·36	2·75	466·89	*b* Column 5 includes 47·28 miles added owing to re-measurment.
	1891-92	551·08	466·89	14·86	2·15	479·60	
	1892-93	551·33	479·60	7·27	0·42	486·45	
Hissár ...	1890-91	393·81	103·05	...	...	103·05	
	1891-92	393·81	103·05	...	...	103·05	
	1892-93	393·81	103·05	...	...	103·05	
„ Municipality	1890-91	5·59	5·21	...	...	5·21	
	1891-92	5·59	5·21	...	...	5·21	
	1892-93	5·59	5·21	...	...	5·21	
VERY DRY.							
Ferozepore ...	1890-91	731·75	489·40	4·50	...	493·90	
	1891-92	731·75	493·90	7·00	...	500·90	
	1892-93	731·75	500·90	8·00	...	508·90	
Pesháwar ...	1890-91	500·75	253·76	89·25	8·20	334·81	
	1891-92	503·00	334·81	49·33	37·00	347·14	
	1892-93	511·00	347·14	48·20	27·44	367·90	
„ Municipality	1890-91	5·50	5·50	...	...	5·50	
	1891-92	5·50	5·50	...	...	5·50	
	1892-93	5·50	5·50	...	...	5·50	
Kohát ...	1890-91	11·32	2·33	3·78	1·27	4·84	
	1891-92	11·32	4·84	1·75	2·30	4·29	
	1892-93	11·32	4·29	2·14	1·22	5·21	
Rohtak ..	1890-91	461·08	197·93	5·50	3·50	199·93	
	1891-92	461·08	199·93	9·00	0·50	208·43	
	1892-93	461·08	208·43	14·00	...	222·43	
Lahore ...	1890-91	374·91	171·30	12·28	7·25	176·33	
	1891-92	374·91	176·33	10·97	2·00	185·30	
	1892-93	374·91	185·30	9·16	1·50	192·96	
„ Municipality	1890-91	56·14	40·73	*c* 12·05	...	52·78	*c* The entry in column 5 is due to omission from previous years.
	1891-92	56·14	52·78	0·90	0·25	53·43	
	1892-93	56·14	53·43	...	...	53·43	
Karnál ...	1890-91	241·70	67·82	3·75	0·75	70·82	
	1891-92	241·70	70·82	*d* 5·38	...	76·20	*d* Column 5 includes 2·50 miles previously stocked but not shown hitherto.
	1892-93	241·70	76·20	1·75	0·25	*e* 77·70	*e* Planted with single lines of trees on either side of the road.
„ Municipality	1890-91	7·95	...	7·95	...	*f* 7·95	*f* The entry in column 5 is due to omissions from previous returns.
	1891-92	7·95	7·95	...	...	7·95	
	1892-93	8·23	7·95	0·28	...	8·23	
DRY.							
Jhelum ...	1890-91	266·01	226·89	18·95	1·91	243·93	
	1891-92	266·01	243·93	15·90	2·53	257·30	
	1892-93	370·01	257·30	19·52	2·57	274·25	
„ Municipality	1890-91	16·52	11·03	1·23	0·40	11·86	
	1891-92	16·52	11·86	1·80	0·15	13·51	
	1892-93	16·52	13·51	3·56	1·12	15·95	

STATEMENT No. V – continued.

1	2	3	4	5	6	7	8
DISTRICT.	Year	Length of roads and canals suitable for avenues	Length of roads and canals fully stocked with trees at beginning of year.	Length of roads and canals planted during the year.	Length of roads and canals which have failed during the year.	Length of roads and canals fully stocked with trees or plants alive at end of the year.	REMARKS.
		Miles.	*Miles.*	*Miles.*	*Miles.*	*Miles.*	
Gujránwála ...	1890-91	388·83	86·00	11·41	2·91	94·50	
	1891-92	388·83	94·50	4·50	3·33	95·67	
	1892-93	388·83	95·67	18·36	1·00	113·03	
Gurgáon ...	1890-91	358·76	243·79	3·00	...	246·79	
	1891-92	358·76	246·79	20·54	19·04	248·29	
	1892-93	396·15	248·29	*a* 9·71	4·20	253·80	
Amritsar ...	1890-91	277·61	146·06	22·49	8·68	159·87	
	1891-92	277·61	159·87	9·83	8·35	161·35	
	1892-93	278·61	161·35	15·45	8·95	167·85	
,, Municipality	1890-91	66·00	39·26	0·21	0·19	39·28	
	1891-92	66·00	39·28	5·72	...	45·00	
	1892-93	66·00	45·00	3·27	...	48·27	
Delhi ...	1890-91	297·62	76·30	52·22	16·69	111·83	
	1891-92	322·05	111·83	60·36	45·01	127·18	
	1892-93	333·12	127·18	61·33	36·92	151·59	
,, Municipality	1892-93	38·00	...	25·00	...	*b* 25·00	
Jalandhar ...	1890-91	276·52	213·65	5·50	...	219·15	
	1891-92	283·80	219·15	5·28	...	224·43	
	1892-93	283·80	224·43	6·00	...	230·43	
Ludhiána ...	1890-91	157·75	129·87	3·00	...	*c* 132·87	
	1891-92	157·75	132·87	1·37	...	*d* 134·24	
	1892-93	157·75	134·24	4·00	...	*e* 138·24	
Ráwalpindi ...	1890-91	987·97	336·47	43·05	30·95	348·57	
	1891-92	987·97	348·57	13·72	22·14	340·15	
	1892-93	987·97	340·15	3·66	12·99	330·82	
,, Municipality	1890-91	11·61	9·38	...	...	9·38	
	1891-92	11·61	9·38	...	...	9·38	
	1892-93	11·61	9·38	1·39	0·41	10·36	
FOREST.							
Gujrát ...	1890-91	611·00	410·00	3·00	2·00	411·00	
	1891-92	611·00	411·00	32·00	31·00	412·00	
	1892-93	611·00	412·00	15·00	9·00	418·00	
Gurdáspur ...	1890-91	605·39	383·23	19·70	3·12	399·81	
	1891-92	605·39	399·81	10·62	2·28	408·15	
	1892-93	605·39	408·15	20·44	1·79	426·80	
Ambala ...	1890-91	387·46	258·75	50·89	3·25	306·39	
	1891-92	400·91	306·39	...	...	306·39	
	1892-93	382·91	306·39	17·60	...	323·99	
Siálkot ...	1890-91	838·25	449·00	29·50	21·00	457·50	
	1891-92	838·50	457·50	18·24	...	475·74	
	1892-93	838·50	575·74	10·75	7·00	479·49	
,, Municipality	1890-91	2·50	2·00	...	...	2·00	
	1891-92	4·50	2·00	0·75	...	2·75	
	1892-93	4·50	2·75	0·75	...	3·50	
Hoshiárpur ...	1890-91	440·50	411·16	5·00	...	416·16	
	1891-92	440·50	416·16	8·50	...	424·66	
	1892-93	440·50	424·66	9·50	...	434·16	
Simla ...	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92	4·25	...	4·25	1·65	2·60	
	1892-93	2·60	2·60	0·06	...	2·66	
Hazára ...	1890-91	47·00	14·20	1·20	0·60	14·80	
	1891-92	47·00	14·80	1·00	0·50	15·30	
	1892-93	47·00	15·30	0·50	...	15·80	
,, Municipality	1890-91	4·50	4·00	0·23	..	4·23	
	1891-92	4·50	4·23	0·50	0·25	4·48	
	1892-93	4·50	4·48	0·02	0·50	4·00	
Kángra ...	1890-91	501·59	318·99	29·49	8·74	339·74	
	1891-92	501·59	339·74	22·66	12·69	349·71	
	1892-93	501·59	349·71	35·99	18·36	367·34	
Dharmsála Municipality.	1890-91	6·35	5·50	0·85	...	6·35	
	1891-92	6·35	6·35	...	...	6·35	
	1892-93	6·35	6·35	...	...	6·35	
Total ...	1890-91	12,436·78	6,124·80	516·25	125·74	6,515·31	
	1891-92	12,507·26	6,515·31	368·72	212·30	6,671·73	
	1892-93	12,640·75	6,671·73	463·79	180·01	6,928·51	

a Column 5 includes 0·51 miles due to correction of errors.

b Two of the roads are planted with two lines of trees on each side, and the remaining roads with one line of trees on each side.

b The entry in column 5 is due to omission from previous years.

c 4,521 new trees were planted to replace dead trees.

d 1,854 young trees were planted out along roadsides during the year to replace dead ones. The roads are planted with single lines of trees on either side.

e 4 miles of roads were planted with single lines of trees on either side, numbering 1,750.

STATEMENT No. V—continued.

Progress Statement of Avenues in the Canal Divisions of the Punjab for the years 1890-91 *to* 1892-93.

1	2	3	4	5	6	7	8
Canal Division.	Year.	Length of roads and canals suitable for avenues.	Length of roads and canals fully stocked with trees at beginning of year.	Length of roads and canals planted during the year.	Length of roads and canals which have failed during the year.	Length of roads and canals fully stocked with trees or plants alive at end of the year.	Remarks.
		Miles.	*Miles.*	*Miles.*	*Miles.*	*Miles.*	
Bári Doáb Canal, 1st Division.	1890-91	179·70	145·10	...	2·00	143·10	*a* Correct figure has now been entered by the Executive Engineer.
	1891-92	179·70	143 10	...	1·17	141·93	
	1892-93	179·70	141·93	9·00	3·17	147·76	
Bári Doáb Canal, 2nd Division.	1890-91	*a* 166·20	166·20	...	63·14	*b* 103 06	*b* 63 14 miles transferred to 3rd Division, Bári Doáb Canal.
	1891-92	103·53	103·06	...	...	103·06	
	1892-93	103·53	103·06	...	...	103·06	*c* Column 5 includes 63·14 miles received by transfer from 2nd Division, Bári Doáb Canal.
Bári Doáb Canal, 3rd Division.	1890-91	72·80	...	*c* 68·75	4·04	64·71	
	1891-92	72 80	64·71	1·00	0·50	65·21	
	1892-93	72·80	65·21	7·59	..	72·80	*d* Columns 5 and 6 each include 38 36 miles due to correction of previous returns.
Upper Sutlej Division, Inundation Canals.	1890-91	467·83	283·25	0·02	0·09	283·18	
	1891-92	468·86	283·18	64·97	*d* 38·36	309·79	
	1892-93	468·86	309·79	...	*e* 26·61	283·18	*e* The entry in column 6 is due to correction of error made in 1891-92.
Multan Canals Division.	1890-91	1,026·00	892·00	*f* 18·93	7·68	903·25	
	1891-92	1,040·60	903·25	10·69	5·04	908·90	*f* Column 5 includes 15·40 miles omitted in previous returns.
	1892-93	701·60	908·90	12·50	*g* 351·80	569·60	
Dera Gházi Khan Division, Indus Canal.	1890-91	523·95	166·03	12·87	0·80	178·10	*g* The entry in column 6 is due to river action and correction of errors in previous returns.
	1891-92	397·13	178·10	4·97	4·50	178 57	
	1892-93	398·73	178·57	3·50	0·50	181·57	
Muzaffargarh Canal Division.	1890-91	115·20	40·08	15·25	*h* 12·66	42·67	*h* Failures have been due mainly to insufficient water-supply and unsuitability of soil in which the trees were planted.
	1891-92	102·25	42·67	5·66	*h* 7·49	40·84	
	1892-93	102·25	40·84	0·70	*h* 4·86	36·68	
Western Jumna Canal, Karnál Division.	1890-91	453·30	385·61	4·30	0·54	389·37	
	1891-92	465·70	389·37	5·90	*i* 18 00	377·27	
	1892-93	506·50	377·27	29·62	8·00	398·89	*i* Column 6 includes 14 miles due to correction of previous returns and 4 miles as failures owing to cattle-trespass.
Western Jumna Canal, Delhi Division.	1890-91	1,331·80	451·26	28·60	6·50	473·36	
	1891-92	1,331·80	473·36	27·50	7·70	493·16	
	1892-93	286·87	493·16	*j* 147·66	*k* 420·97	219·85	*j* Column 5 includes 145·66 miles due to correction of previous errors and 2 miles newly planted.
Western Jumna Canal, Hissár Division.	1892-93	35·00	...	7 40	...	7 40	*k* The entry in column 6 is made up thus—
							252·50 miles transferred to plantations.
							151·73 miles correction adjusted.
							16·74 miles cut for fuel.
							420·97
Sirhind Canal, Ferozepore Division.	1890-91	608·90	86·60	*l* 26·05	0·04	113·06	*l* Column 5 includes 23·43 miles previously stocked but not shown hitherto.
	1891-92	294·00	113·06	7·30	*m* 18 83	101·53	
	1892-93	294·00	101·53	2·00	45·33	58·20	*m* The entry in column 6 is due to correction of previous returns.
Sirhind Canal, Ludhiána Division.	1890-91	293·38	95·98	44·27	5·60	134·65	
	1891-92	334·40	134·65	38 90	1·40	172·15	
	1892-93	334·00	172·15	21·60	2·10	191·65	*n* Column 5 includes 47 90 miles transferred from Chenáb Canal, 2nd Division.
Sirhind Canal, Patiála Division.	1890-91	221·34	72·01	37·00	...	109·01	
	1891-92	221·34	109·01	3·38	...	112·39	
	1892-93	221·34	112·39	3·00	0·70	114 69	*o* Column 6 includes 47·9 miles transferred to 1st Division, Bári Doáb Canal.
Chenáb Canal, 1st Division.	1890-91	1·40	...	0·80	...	0·80	
	1891-92	2·00	0·80	1·00	..	1·80	
	1892-93	86·50	1·80	*n* 79·30	29·50	51·90	
Chenáb Canal, 2nd Division.	1890-91	117·50	55·36	2·60	46	56·50	
	1891-92	117·50	56·50	12·50	22·10	46·90	
	1892-93	500·00	46·90	20·47	*o* 48·80	18·57	
Chenáb Canal, 4th Division.	1892-93	...	...	...	...	...	
Chenáb Canal, 5th Division.	1892-93	...	...	...	...	...	
Swát River Canal Division.	1890-91	176·00	95·73	60·00	22·00	139·73	
	1891-92	176·00	139·73	30·52	18·75	151·50	
	1892-93	176·00	151·50	16·95	20·00	148·45	
Total ...	1890-91	5,755·30	2,935·21	325·89	126·55	3,134·55	
	1891-92	5,313·61	3,134·55	214·29	145·34	3,205·00	
	1892-93	4,467·68	3,205·00	361·59	962·34	2,604·25	

STATEMENT No. V—concluded.

Progress Statement of Avenues in Provincial Divisions, P. W. D., for the years 1890-91 *to* 1892-93.

1	2	3	4	5	6	7	8
Provincial Division.	Year.	Length of roads and canals suitable for avenues.	Length of roads and canals fully stocked with trees at beginning of year.	Length of roads and canals planted during the year.	Length of roads and canals which have failed during the year.	Length of roads and canals fully stocked with trees or plants alive at end of the year.	Remarks.
		Miles.	*Miles.*	*Miles.*	*Miles.*	*Miles.*	
Peshawar Division.	1890-91	298·38	240·15	20·55	4·26	256·44	
	1891-92	205·42	256·44	17·88	*a* 134·82	139·50	
	1892-93	212·00	139·50	17·22	3·25	153·47	
Ráwalpindi Division.	1890-91	243·44	128·90	35·44	...	164·34	
	1891-92	206·64	164·34	12·09	*b* 94·92	81·51	
	1892-93	206·64	81·51	2·50	...	84·01	
Kohát North-West Frontier Road Division.	1890-91	88·51	15 36	6·43	2·77	19·02	
	1891-92	78·51	19·02	...	3·87	15·15	
	1892-93	78·51	15·15	2·56	5·38	12·33	
Gujránwála Independent Sub-Division.	1890-91	46·10	45·45	...	...	45·45	
	1891-92	90·94	45·45	*c* 44·84	...	90·29	
	1892-93	90·94	90·29	...	...	90·29	
Jalandhar Division.	1890-91	237·63	126·38	13·46	3·55	136·29	
	1891-92	237·63	136·29	17·94	6·30	147·93	
	1892-93	237·63	147·93	15·89	15·43	148·39	
Simla Division ...	1890-91	224·00	*Nil.*	*Nil.*	*Nil.*	*d Nil.*	
	1891-92	224·00					
	1892-93	224·00					
Ambala Division	1890-91	153·97	103·33	8·41	1·00	110·74	
	1891-92	153 97	110·74	36·00	27·00	119·74	
	1892-93	153·97	119·74	17·60	*e* 19·50	117·84	
Delhi Division ...	1890-91	90 00	67·50	2·50	2·50	67·50	
	1891 92	90·00	67·50	3·75	2·62	68·63	
	1892-93	90·00	68·63	3·00	2·25	*f* 69·38	
Dera Ismail Khan Division.	1890-91	*g* 94 88	6·20	*Nil.*	0·75	5·45	
	1891-92	*g* 94·88	5·45	0·91	0·70	5·66	
	1892-93	94·88	5·66	...	0·04	5·62	
Dera Gházi Khan Division.	1890 91	197·50	54·59	3·54	5·82	52·31	
	1891-92	197·50	52·31	3·16	*h* 4·97	50·50	
	1892-93	197·50	50·50	5 48	4·23	51·75	
Lahore Division	1890-91	135 59	132·51	2 51	*i* 34 65	100·37	
	1891-92	135·59	100·37	1·99	0·55	101·81	
	1892-93	135·59	101 81	2·25	*j* 12·44	91·62	
Amritsar Division	1890-91	58 16	...	*k* 38·12	1·62	36·50	
	1891-92	55·16	36·50	5·06	1·56	40·00	
	1892-93	55·16	40·00	4·50	1·87	42·63	
Multan Division	1890-91	7·70	6·50	0·47	0·06	6·91	
	1891-92	9·80	6·91	0·50	0·16	7·25	
	1892-93	30·80	7·25	*l* 16 07	0·05	23·27	
Total ...	1890-91	1,875·86	926·87	131 43	56 98	1,001·32	
	1891-92	1,780 04	1,001·32	144·12	277·47	867·97	
	1892-93	1,807·62	867·97	87·07	64·44	890·60	

a Column 6 includes 129·06 miles of roads due to correction of returns of previous years. Actual failures during 1891-92 were 5·76 miles only.

b Column 6 includes 44·84 miles transferred to Gujránwála Division, 46·63 miles due to correction of previous returns, and 3·45 miles as failures owing to the prevalence of locusts.

c Column 5 includes 44 84 miles received by transfer from Ráwalpindi Division.

d There are no regular arboricultural operations in the Simla Provincial Division. The Hindustán-Thibet and the Kálka-Simla roads pass through Native States. The only portion over which the Executive Engineer is supposed to have any control is a strip 100 feet wide on each side of the road, but he has not control at all over the planting up of these roads.

e Column 6 includes 2 miles due to the correction of previous returns. 17·60 miles failed owing to extremely rainless and hot season of 1892.

f Almost everywhere there is a single line of trees on each side of the road.

g The entries in column 3 have been corrected by the Executive Engineer.

h The entry in column 6 is due to correction of errors in previous year's returns.

i 34·65 miles include 34·25 miles transferred to Amritsar Provincial Division.

j 12·44 miles include 11·95 miles transferred to Lahore Municipality and 0·49 of a mile failed.

k Column 5 includes 34·25 miles received by transfer from Lahore Provincial Division.

l The figure in column 5 includes 15·57 miles transferred from Jhang District.

STATEMENT No. VI.

Income from Arboriculture in the Districts of the Punjab during the years 1890-91 *to* 1892-93.

District	Year.	Ornamental Gardens.	Nurseries.	Plantations.	Groves and Avenues.	Miscellaneous.	Total.	Remarks.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Muzaffargarh ..	1890-91	348	126	...	318	6	798	
	1891-92	528	46	...	441	16	1,031	
	1892-93	312	60	...	696	21	1,079	
Multan	1890-91	1,491	33	...	547	...	2,071	
	1891-92	2,616	63	...	422	...	3,101	
	1892-93	2,709	15	...	394	8	3,126	
Dera Gházi Khan...	1890-91	414	...	...	212	13	639	
	1891-92	751	...	...	425	332	1,508	
	1892-93	453	...	...	195	312	960	
Dera Ismail Khan...	1890-91	...	...	...	...	...	...	
	1891-92	...	...	...	78	...	78	
	1892-93	...	...	...	282	...	282	
Montgomery ...	1890-91	609	...	...	215	...	824	
	1891-92	868	...	...	599	...	1,467	
	1892-93	565	...	...	674	...	1,239	
Jhang	1890-91	827	...	471	244	31	1,573	
	1891-92	854	...	322	56	7	1,239	
	1892 93	442	...	778	112	7	1,339	
,, Municipality	1890-91	244	...	...	124	8	376	
	1891-92	193	...	...	43	...	236	
	1892-93	167	...	...	103	43	312	
Bannu	1890-91	320	...	2,607	424	6,842	10,193	
	1891-92	516	...	2,859	263	7,317	10,955	
	1892-93	441	...	834	233	5,196	6,704	
Shahpur	1890-91	1,694	53	...	4.621	...	6,368	
	1891-92	1,375	...	...	8,790	572	10,737	
	1892-93	1,444	25	...	9,561	...	11,030	
Hissár	1890-91	50	100	...	585	...	735	
	1891-92	36	54	...	276	...	366	
	1892-93	103	32	..	412	...	547	
,, Municipality	1890-91	191	...	...	95	24	310	
	1891-92	273	...	...	...	..	273	
	1892-93	719	...	...	75	...	794	
Ferozepore	1890-91	...	...	...	3,687	...	3,687	
	1891-92	...	...	...	3,709	...	3,709	
	1892-93	...	...	...	5,300	20	5,320	
Peshawar	1890-91	653	...	...	238	58	949	
	1891-92	619	...	...	194	10	823	
	1892-93	355	...	...	352	8	715	
,, Municipality	1890-91	2,188	...	...	14	...	2,202	
	1891-92	2,234	...	...	45	...	2,279	
	1892 93	4,119	...	...	2	...	4,121	
Kohát	1890-91	*a* 525	...	...	...	37	562	*a* The income of Rs. 525 and 342 on account of Gardens was omitted from the annual returns of 1890-91 and 1891-92 respectively.
	1891-92	*a* 342	...	...	...	77	419	
	1892-93	566	...	...	...	30	596	
Rohtak	1890-91	...	5	...	247	...	252	
	1891-92	...	2	...	1,262	...	1,264	
	1892-93	...	...	...	695	321	1,016	
Lahore	1890-91	2,175	52	10	42	552	2,831	
	1891-92	2,783	11	..	1,314	...	4,108	
	1892-93	3,396	...	..	817	34	4,247	
,, Municipality	1890-91	9,359	...	10	...	2,570	11,939	
	1891-92	5,069	...	...	...	2,742	7,811	
	1892 93	4,118	...	...	...	3,174	7,292	
Karnál	1890-91	...	56	...	489	248	793	
	1891-92	...	60	...	224	180	464	
	1892-93	...	80	...	175	241	496	
Jhelum	1890-91	723	95	1,779	...	50	2,647	
	1891-92	630	1	...	2,237	115	2,983	
	1892-93	474	15	...	887	14	1,390	

STATEMENT No. VI—continued.

District.	Year.	Ornamental Gardens.	Nurseries.	Plantations.	Groves and Avenues.	Miscellaneous.	Total.	Remarks.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Gujránwála ...	1890-91	894	...	...	2,459	...	3,353	
	1891-92	453	...	...	1,874	57	2,384	
	1892-93	378	...	...	1,242	36	1,656	
Gurgáon	1890-91	140	111	86	2,697	30	3,064	
	1891-92	152	49	240	3,039	60	3,540	
	1892-93	174	43	289	3,295	...	3,801	
Amritsar	1890-91	112	...	...	1,923	56	2,091	
	1891-92	94	37	...	2,480	33	2,644	
	1892-93	376	71	...	911	12	1,370	
„ Municipality	1890-91	*a* 2,608	124	...	1,201	927	4,860	*a* The income of Rs. 2,104 on account of gardens was omitted from annual returns.
	1891-92	*b* 2,600	...	...	*b* 2,733	736	6,069	
	1892-93	2,342	285	...	1,517	1,182	5,326	
Delhi	1890-91	4,318	...	5,420	495	...	10,233	*b* The income of Rs. 798 on account of gardens and Rs. 1,509 on account of groves and avenues was omitted from annual statements.
	1891-92	9,055	1	9,398	410	10	18,874	
	1892-93	...	...	1,955	786	...	2,741	
„ Municipality ...	1892-93	4,966	...	3,452	270	...	8,688	
Jalandhar	1890-91	443	304	911	6,298	20	7,976	
	1891-92	1,099	40	...	6,160	14	7,313	
	1892-93	706	265	3,869	5,951	...	10,791	
Ludhiána	1890-91	264	355	...	3,681	100	4,400	
	1891-92	2,160	520	...	3,308	45	6,033	
	1892-93	992	349	...	4,207	97	5,645	
Ráwalpindi... ...	1890-91	2,181	...	...	1,169	...	3,350	
	1891-92	2,773	...	...	702	...	3,475	
	1892-93	2,317	...	...	492	...	2,809	
„ Municipality	1890-91	1,064	...	...	310	...	1,374	
	1891-92	1,284	...	...	86	...	1,370	
	1892-93	1,132	...	...	252	...	1,384	
Gujrát	1890-91	82	3	...	7,776	98	7,959	
	1891-92	155	19	...	8,494	205	8,873	
	1892-93	284	33	...	7,001	100	7,418	
Gurdáspur	1890-91	878	*c* 185	...	3,987	...	5,050	*c* The increase of Rs. 95 and Rs. 5 under nurseries over the figures given in the annual returns for 1890-91 and 1891-92 respectively is due to correction of previous errors.
	1891-92	940	*c* 131	...	3,360	...	4,431	
	1892-93	836	235	...	4,429	...	5,500	
Umballa	1890-91	224	...	...	13,063	...	13,287	
	1891-92	292	...	...	226	...	518	
	1892-93	444	...	...	13,179	...	13,623	
Siálkot	1890 91	2,036	4	...	36,095	226	38,361	
	1891-92	1,781	3	...	24.143	121	26,048	
	1892-93	1,878	4	...	19,512	373	21,767	
Hoshiárpur... ...	1890-91	766	...	...	7,514	357	8,637	
	1891-92	783	...	...	2,040	1,258	4,081	
	1892-93	556	...	...	12,089	298	12,943	
Simla	1890-91	11,165	...	1,338	...	1,836	14,339	
	1891-92	10,471	...	3,024	...	953	14,448	
	1892-93	9,407	...	4,010	...	747	14,164	
Hazára	1890-91	...	91	...	36	80	207	
	1891-92	...	83	...	20	111	214	
	1892-93	...	9	...	25	105	139	
„ Municipality	1890-91	2,113	...	93	45	...	2,251	
	1891-92	1,850	30	...	29	20	1,929	
	1892-93	1,683	21	...	20	...	1,724	
Kángra	1890-91	235	...	...	809	...	1,044	
	1891-92	348	...	...	820	...	1,168	
	1892-93	241	7	...	732	7	987	
„ Municipality	1890-91	81	...	...	...	...	81	
	1891-92	107	...	...	29	...	136	
	1892-93	174	...	...	...	...	174	
Total ...	1890-91	51,415	1,697	12,725	1,01,660	14,169	1,81,666	
	1891-92	56,084	1,150	15,843	80,331	14,991	1,68,399	
	1892-93	49,269	1,539	15,187	96,874	12,386	1,75,255	

STATEMENT No. VI—continued.

Income from Arboriculture in the Canal Divisions during the years 1890-91 *to* 1892-93.

Canal Division.	Year.	Ornamental Gardens.	Nurseries.	Plantations.	Groves and Avenues.	Miscellaneous.	Total.	Remarks.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Bári Doáb Canal, 1st Division.	1890-91	...	...	20,303	...	922	21,225	
	1891-92	...	...	10,011	1,630	446	12,087	
	1892-93	...	...	13,210	...	23	13,233	
Bári Doáb Canal, 2nd Division.	1890-91	27	...	3,733	3,186	5,286	12,232	
	1891-92	63	...	3,169	3,073	5,925	12,230	
	1892-93	40	...	2,805	...	3,895	6,740	
Bári Doáb Canal, 3rd Division.	1890-91	...	...	4,144	...	3,933	8,077	
	1891-92	...	...	13,470	...	3,297	16,767	
	1892-93	...	...	6,050	2,165	2,485	10,700	
Upper Sutlej Division, Inundation Canals.	1890-91	...	...	1,650	...	2,804	4,454	
	1891-92	...	...	6,151	...	1,954	8,105	
	1892-93	...	..	8,685	...	1,658	10,343	
Mooltan Canals Division.	1890-91	...	...	...	10,318	1,239	11,557	
	1891-92	...	...	...	12,129	906	13,035	
	1892-93	...	..	...	7,515	1,229	8,744	
Dera Gházi Khan Division, Indus Canals.	1890-91	...	24	...	1,364	31	1,419	
	1891-92	...	25	...	2,210	54	2,289	
	1892-93	...	10	...	1,681	57	1,748	
Muzaffargarh Canals Division.	1890-91	...	...	...	7,863	49	7,912	
	1891-92	...	...	...	5,803	...	5,803	
	1892-93	...	...	...	5,233	...	5,233	
Western Jumna Canal, Karnál Division.	1890-91	...	...	...	13,442	...	13,442	
	1891-92	862	...	...	8,767	...	9,629	
	1892-93	339	...	...	13,253	...	13,592	
Western Jumna Canal, Delhi Division.	1890-91	...	..	...	4,002	...	4,002	The income of plantations is said to be included in that of avenues.
	1891-92	...	...	...	5,708	...	5,708	
	1892-93	...	...	...	3,277	...	3,277	
Western Jumna Canal, Hissár Division.	1892-93	...	...	...	...	...	...	
Sirhind Canal, Ferozepore Division.	1890-91	...	...	1,056	...	1,890	2,946	
	1891-92	...	...	703	...	1,717	2,420	
	1892-93	...	...	86	...	2,354	2,440	
Sirhind Canal, Ludhiána Division.	1890-91	...	...	8,986	325	6,940	16,251	
	1891-92	...	...	4,451	46	8,101	12,598	
	1892-93	...	...	9,432	...	10,384	19,816	
Sirhind Canal, Patiála Division.	1890-91	45	128	1,156	...	3,178	4,507	
	1891-92	30	...	2,830	6	2,672	5,538	
	1892-93	...	16	1,691	...	2,899	4,606	
Chenáb Canal, 1st Division.	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92	*Nil.*	*Nil.*	*Nil*	*Nil.*	*Nil.*	*Nil.*	
	1892-93	*Nil.*	*Nil.*	1	*Nil.*	*Nil.*	1	
Chenáb Canal, 2nd Division.	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92	...	..	1	...	...	1	
	1892-93	...	...	16	...	...	16	
Swát River, Canal Division.	1890-91	...	...	24	...	112	136	
	1891-92	...	...	150	...	82	232	
	1892-93	...	...	127	...	149	276	
Total ...	1890-91	72	152	41,052	40,500	26,384	1,08,160	Revised figures received from Patiála Division hence the difference.
	1891-92	955	25	40,936	39,372	25,154	1,06,442	
	1892-93	379	26	42,103	33,124	25,133	1,00,765	

STATEMENT No. VI—continued.

District.	Year.	Ornamental Gardens.	Nurseries.	Plantations.	Groves and Avenues.	Miscellaneous.	Total.	Remarks.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Gujránwála ...	1890-91	894	...	...	2,459	...	3,353	
	1891-92	453	...	...	1,874	57	2,384	
	1892-93	378	...	...	1,242	36	1,656	
Gurgáon	1890-91	140	111	86	2,697	30	3,064	
	1891-92	152	49	240	3,039	60	3,540	
	1892-93	174	43	289	3,295	...	3,801	
Amritsar	1890-91	112	...	...	1,923	56	2,091	
	1891-92	94	37	...	2,480	33	2,644	
	1892-93	376	71	...	911	12	1,370	
„ Municipality	1890-91	*a* 2,608	124	...	1,201	927	4,860	*a* The income of Rs. 2,104 on account of gardens was omitted from annual returns.
	1891-92	*b* 2,600	...	...	*b* 2,733	736	6,069	
	1892-93	2,342	285	...	1,517	1,182	5,326	
Delhi	1890-91	4,318	...	5,420	495	...	10,233	*b* The income of Rs. 798 on account of gardens and Rs. 1,509 on account of groves and avenues was omitted from annual statements.
	1891-92	9,055	1	9,398	410	10	18,874	
	1892-93	...	...	1,955	786	...	2,741	
„ Municipality ...	1892-93	4,966	...	3,452	270	...	8,688	
Jalandhar	1890-91	443	304	911	6,298	20	7,976	
	1891-92	1,099	40	...	6,160	14	7,313	
	1892-93	706	265	3,869	5,951	...	10,791	
Ludhiána	1890-91	264	355	...	3,681	100	4,400	
	1891-92	2,160	520	...	3,308	45	6,033	
	1892-93	992	349	...	4,207	97	5,645	
Ráwalpindi... ...	1890-91	2,181	...	...	1,169	...	3,350	
	1891-92	2,773	...	...	702	...	3,475	
	1892-93	2,317	...	...	492	...	2,809	
„ Municipality	1890-91	1,064	...	...	310	...	1,374	
	1891-92	1,284	...	...	86	...	1,370	
	1892-93	1,132	...	...	252	...	1,384	
Gujrát	1890-91	82	3	...	7,776	98	7,959	
	1891-92	155	19	...	8,494	205	8,873	
	1892-93	284	33	...	7,001	100	7,418	
Gurdáspur	1890-91	878	*c* 185	...	3,987	...	5,050	*c* The increase of Rs. 95 and Rs. 5 under nurseries over the figures given in the annual returns for 1890-91 and 1891-92 respectively is due to correction of previous errors.
	1891-92	940	*c* 131	...	3,360	...	4,431	
	1892-93	836	235	...	4,429	...	5,500	
Umballa	1890-91	224	...	...	13,063	...	13,287	
	1891-92	292	...	...	226	...	518	
	1892-93	444	...	...	13,179	...	13,623	
Siálkot	1890 91	2,036	4	...	36,095	226	38,361	
	1891-92	1,781	3	...	24,143	121	26,048	
	1892-93	1,878	4	...	19,512	373	21,767	
Hoshiárpur... ...	1890-91	766	...	...	7,514	357	8,637	
	1891-92	783	...	...	2,040	1,258	4,081	
	1892-93	556	...	...	12,089	298	12,943	
Simla	1890-91	11,165	...	1,338	...	1,836	14,339	
	1891-92	10,471	...	3,024	...	953	14,448	
	1892-93	9,407	...	4,010	...	747	14,164	
Hazára	1890-91	...	91	...	36	80	207	
	1891-92	...	83	...	20	111	214	
	1892-93	...	9	...	25	105	139	
„ Municipality	1890-91	2,113	...	93	45	...	2,251	
	1891-92	1,850	30	...	29	20	1,929	
	1892-93	1,683	21	...	20	...	1,724	
Kángra	1890-91	235	...	...	809	...	1,044	
	1891-92	348	...	...	820	...	1,168	
	1892-93	241	7	...	732	7	987	
„ Municipality	1890-91	81	...	...	...	...	81	
	1891-92	107	...	...	29	...	136	
	1892-93	174	...	...	...	...	174	
Total ...	1890-91	51,415	1,697	12,725	1,01,660	14,169	1,81,666	
	1891-92	56,084	1,150	15,843	80,331	14,991	1,68,399	
	1892-93	49,269	1,539	15,187	96,874	12,386	1,75,255	

STATEMENT No. VI—continued.

Income from Arboriculture in the Canal Divisions during the years 1890-91 *to* 1892-93.

Canal Division.	Year.	Ornamental Gardens.	Nurseries.	Plantations.	Groves and Avenues.	Miscellaneous.	Total.	Remarks.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Bári Doáb Canal, 1st Division.	1890-91	...	...	20,303	...	922	21,225	
	1891-92	...	...	10,011	1,630	446	12,087	
	1892-93	...	...	13,210	...	23	13,233	
Bári Doáb Canal, 2nd Division.	1890-91	27	...	3,733	3,186	5,286	12,232	
	1891-92	63	...	3,169	3,073	5,925	12,230	
	1892-93	40	...	2,805	...	3,895	6,740	
Bári Doáb Canal, 3rd Division.	1890-91	...	...	4,144	...	3,933	8,077	
	1891-92	...	...	13,470	...	3,297	16,767	
	1892-93	...	...	6,050	2,165	2,485	10,700	
Upper Sutlej Division, Inundation Canals.	1890-91	...	...	1,650	...	2,804	4,454	
	1891-92	...	...	6,151	...	1,954	8,105	
	1892-93	...	..	8,685	...	1,658	10,343	
Mooltan Canals Division.	1890-91	...	...	...	10,318	1,239	11,557	
	1891-92	...	...	...	12,129	906	13,035	
	1892-93	...	..	...	7,515	1,229	8,744	
Dera Gházi Khan Division, Indus Canals.	1890-91	...	24	...	1,364	31	1,419	
	1891-92	...	25	...	2,210	54	2,289	
	1892-93	...	10	...	1,681	57	1,748	
Muzaffargarh Canals Division.	1890-91	...	...	...	7,863	49	7,912	
	1891-92	...	...	...	5,803	...	5,803	
	1892-93	...	...	...	5,233	....	5,233	
Western Jumna Canal, Karnál Division.	1890-91	...	...	...	13,442	...	13,442	
	1891-92	862	...	...	8,767	...	9,629	
	1892-93	339	...	...	13,253	...	13,592	
Western Jumna Canal, Delhi Division.	1890-91	...	..	...	4,002	...	4,002	The income of plantations is said to be included in that of avenues.
	1891-92	...	...	...	5,708	...	5,708	
	1892-93	...	...	...	3,277	...	3,277	
Western Jumna Canal, Hissár Division.	1892-93	...	...	...	...	...	...	
Sirhind Canal, Ferozepore Division.	1890-91	...	...	1,056	...	1,890	2,946	
	1891-92	...	...	703	...	1,717	2,420	
	1892-93	...	...	86	...	2,354	2,440	
Sirhind Canal, Ludhiána Division.	1890-91	...	...	8,986	325	6,940	16,251	
	1891-92	...	...	4,451	46	8,101	12,598	
	1892-93	...	...	9,432	...	10,384	19,816	
Sirhind Canal, Patiála Division.	1890-91	45	128	1,156	...	3,178	4,507	
	1891-92	30	...	2,830	6	2,672	5,538	
	1892-93	...	16	1,691	...	2,899	4,606	
Chenáb Canal, 1st Division.	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92	*Nil.*	*Nil.*	*Nil*	*Nil.*	*Nil.*	*Nil.*	
	1892-93	*Nil.*	*Nil.*	1	*Nil.*	*Nil.*	1	
Chenáb Canal, 2nd Division.	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92	...	..	1	...	...	1	
	1892-93	...	...	16	...	...	16	
Swát River, Canal Division.	1890-91	...	...	24	...	112	136	
	1891-92	...	...	150	...	82	232	
	1892-93	...	...	127	...	149	276	
Total ...	1890-91	72	152	41,052	40,500	26,384	1,08,160	Revised figures received from Patiála Division hence the difference.
	1891-92	955	25	40,936	39,372	25,154	1,06,442	
	1892-93	379	26	42,103	33,124	25,133	1,00,765	

STATEMENT No. VI—concluded.

Income from Arboriculture in the Provincial Divisions during the years 1890-91 *to* 1892-93.

Provincial Division.	Year.	Ornamental Gardens.	Nurseries.	Plantations.	Groves and Avenues.	Miscellaneous.	Total.	Remarks.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
Peshâwar Division	1890-91	...	...	...	309	375	684	
	1891-92	...	...	...	447	336	783	
	1892-93	...	...	...	225	211	436	
Râwalpindi Division	1890-91	...	...	..	1,472	1,418	2,890	
	1891-92	...	...	...	698	1,803	2,501	
	1892-93	...	...	...	626	1,522	2,148	
Kohât North-West Frontier Road Division.	1890-91	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1891-92	12	...	...	37	...	49	
	1892-93	...	...	...	...	...	...	
Gujránwâla Independent Sub-division.	1890-91	...	...	...	1,176	886	2,062	
	1891-92	25	...	...	1,302	1,753	3,080	
	1892-93	32	...	...	2,788	2,479	5,299	
Jalandhar Division	1890-91	...	...	...	5,063	4,108	9,171	
	1891-92	...	...	...	3,344	3,868	7,212	
	1892-93	...	...	...	6,097	4,523	10,620	
Simla Division ...	1890-91	6	...	...	...	...	6	
	1891-92	5	...	...	...	...	5	
	1892-93	...	...	...	...	...	...	
Umballa Division ...	1890-91	...	...	...	1,473	1,706	3,179	
	1891-92	...	...	...	5,485	...	5,485	
	1892-93	...	...	...	1,210	1,494	2,704	
Delhi Division ...	1890-91	...	...	...	735	717	1,452	
	1891-92	...	...	...	712	647	1,359	
	1892-93	...	...	...	597	613	1,210	
Dera Ismail Khan Division.	1890-91	...	...	...	127	...	127	
	1891-92	...	...	...	...	65	65	
	1892-93	...	...	...	...	32	32	
Dera Ghâzi Khan Division.	1890-91	...	...	...	498	...	498	
	1891-92	...	...	...	896	61	957	
	1892-93	...	...	...	518	...	518	
Lahore Division ...	1890-91	35	...	...	1,870	1,503	3,408	
	1891-92	35	...	...	2,765	1,202	4,002	
	1892-93	75	...	...	1,624	1,346	3,045	
Amritsar Division...	1890-91	...	...	...	1,119	1,519	2,638	
	1891-92	...	...	...	655	284	939	
	1892-93	...	...	...	966	1,378	2,344	
Multan Division ...	1890-91	...	...	...	...	5	5	
	1891-92	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	*Nil.*	
	1892-93	...	...	...	222	2	224	
Total ...	1890-91	41	...	...	13,842	12,237	26,120	
	1891-92	77	...	...	16,341	10,019	26,437	
	1892-93	107	...	...	14,873	13,600	28,580	

STATEMENT No. VII.

Expenditure on Arboriculture in the Districts of the Punjab during the years 1890-91 *to* 1892-93.

1	2	3	4	5	6	7	8	9	10	11	12
		Works.								Establishment.	
		Ornamental Gardens.		*Nurseries.*		*Plantations and Afforestation.*		*Groves and Avenues.*			
District.	Year.	Maintenance and repairs of existing Gardens.	Extension of Gardens.	Maintenance and repairs of existing Nurseries.	Extension of Nurseries.	Maintenance and repairs of existing Plantations and Afforestation.	Extension of Plantations and Afforestation.	Maintenance and repairs of existing Groves and Avenues.	Extension of Groves and Avenues.	General Supervising Establishment, including Office Establishment.	Total.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Muzaffargarh	1890-91	2,998	...	49	...	...	...	3,840	1,252	...	8,139
	1891-92	2,996	...	57	...	...	...	4,412	492	...	7,957
	1892-93	4,746	...	72	...	...	...	3,548	489	...	8,855
Multan	1890-91	6,509	...	814	...	...	...	2,473	...	...	9,796
	1891-92	7,720	...	891	55	...	...	2,850	650	...	12,166
	1892-93	8,176	..	831	...	...	...	3,144	1,301	...	13,452
Dera Gházi Khan ...	1890-91	4,244	...	...	25	576	18	1,356	104	120	6,443
	1891-92	5,618	...	73	...	143	..	1,596	...	120	7,550
	1892-93	5,314	...	60	...	392	...	1,317	...	120	7,203
Dera Ismail Khan ...	1890-91	...	...	...	...	...	...	1,725	...	...	1,725
	1891-92	...	220	180	35	...	...	3,403	128	306	4,272
	1892-93	...	230	200	130	...	...	4,961	120	150	5 791
Montgomery	1890-91	2,060	156	...	...	...	...	483	...	...	2,699
	1891-92	2,836	...	...	...	...	...	440	...	...	3,276
	1892-93	2,158	...	...	...	...	...	640	...	...	2,798
Jhang	1890-91	2,682	...	...	...	62	...	2,210	13	166	5,133
	1891-92	3,740	...	...	...	91	...	2,963	...	433	7,227
	1892-93	2,933	71	...	...	211	...	2,045	80	180	5,520
„ Municipality ...	1890-91	1,397	...	...	...	...	...	895	...	40	2,332
	1891-92	1,611	...	...	...	...	...	905	...	140	2,656
	1892-93	1,307	...	...	...	...	...	797	..	120	2,224
Bannu	1890-91	1,411	...	90	...	...	...	2,806	...	...	4,307
	1891-92	1,440	...	40	20	240	...	1,891	50	630	4,311
	1892-93	1,572	...	83	...	240	...	2,024	...	72	4,639
Shahpur	1890-91	868	626	180	125	...	...	1,517	240	2,461	6,017
	1891-92	912	550	132	160	...	...	3,914	2,000	780	8,448
	1892-93	1,021	520	144	50	..	...	1,591	5,300	756	9,382
Hissár	1890-91	652	...	1,861	...	308	...	1,280	...	...	4,101
	1891-92	624	1,479	4,390	1,231	266	355	2,601	...	...	10,946
	1892-93	1,586	...	2,729	...	153	...	2,283	...	...	6,751
Municipality ...	1890-91	2,416	...	...	...	...	...	167	...	...	2,583
	1891-92	2,553	...	...	...	...	...	387	...	...	2,940
	1892-93	5,641	...	...	...	...	...	731	...	...	6,372
Ferozepore	1890-91	...	...	...	...	...	...	5,571	...	1,044	6,615
	1891-22	...	...	...	...	...	...	5,443	...	1,044	6,487
	1892-93	...	...	...	...	...	...	5,958	...	1,044	7,002
Peshawar	1890-91	4,153	...	2	...	...	...	5,277	2,349	...	11,781
	1891-92	3,814	...	...	...	...	...	8,358	1,223	...	13,395
	1892-93	3,041	...	...	...	...	...	8,611	203	...	11,855

STATEMENT No. VII—continued.

1	2	3	4	5	6	7	8	9	10	11	12
		Works.								Establishment.	
		Ornamental Gardens.		*Nurseries.*		*Plantations and Afforestation.*		*Groves and Avenues.*			
District.	Year.	Maintenance and repairs of existing Gardens.	Extension of Gardens.	Maintenance and repairs of existing Nurseries.	Extension of Nurseries.	Maintenance and repairs of existing Plantations and Afforestation.	Extension of Plantation and Afforestation.	Maintenance and repairs of existing Groves and Avenues.	Extension of Groves and Avenues.	General Supervising Establishment, including Office Establishment.	Total.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Peshawar Municipality	1890-91	5,000	325	...	...	...	...	422	...	...	5,747
	1891-92	5,532	...	...	...	...	...	328	...	...	5,860
	1892-93	5,770	1,194	...	...	...	...	294	...	...	7,258
Kohát	1890-91	516	...	60	...	...	...	350	632	...	1,558
	1891-92	636	...	15	35	...	...	621	60	...	1,367
	1892-93	1,064	...	20	...	...	...	520	248	...	1,852
Rohtak	1890-91	...	...	1,121	25	...	...	3,596	314	276	5,332
	1891-92	...	...	859	70	...	...	4,788	264	324	6,305
	1892-93	...	...	778	50	...	...	4,605	233	171	5,837
Lahore	1890-91	482	199	...	21	...	...	1,739	263	1,025	3,729
	1891-92	4,642	...	...	42	...	...	3,218	385	...	8,287
	1892-93	4,023	...	...	...	...	...	2,136	1,730	...	7,889
„ Municipality ...	1890-91	15,500	...	24	...	...	...	20	...	1,171	16,715
	1891-92	16,342	...	12	...	...	...	20	...	908	17,282
	1892-93	21,079	134	12	...	...	...	...	670	712	22,607
Karnál	1890-91	...	...	546	...	...	...	2,964	668	881	5,059
	1891-92	...	...	507	...	...	...	3,277	236	876	4,896
	1892-93	...	...	420	...	...	...	3,940	149	892	5,401
Jhelum	1890-91	2,792	...	...	...	...	...	...	...	3,106	5,898
	1891-92	3,084	...	...	...	...	...	...	...	3,428	6,512
	1892-93	3,393	...	...	...	...	...	...	...	3,143	6,536
Gujránwála	1890-91	2,181	...	6	...	...	...	3,401	...	558	6,146
	1891-92	2,863	...	53	20	...	...	3,477	...	505	6,918
	1892-93	2,841	...	969	...	...	...	3,364	324	362	7,860
Gurgáon	1890-91	1,400	...	648	...	1,809	..	5,080	...	243	9,180
	1891-92	1,534	...	664	...	1,246	...	5,018	...	672	9,134
	1892-93	1,549	...	724	...	1,230	...	4,669	...	406	8,578
Amritsar	1890-91	792	...	115	...	...	...	6,148	...	876	7,931
	1891-92	510	45	227	33	...	...	5,391	522	906	7,634
	1892-93	613	...	280	7	...	...	4,715	489	876	6,980
„ Municipality ...	1890-91	*a* 14,720	...	1,464	...	...	...	...	18	5,163	*a* 21,365
	1891-92	*b* 16,114	...	120	...	120	...	1,014	272	1,572	*b* 19,212
	1892-93	16,247	...	245	...	162	...	1,218	117	1,459	19,448
Delhi	1890-91	8,308	...	50	...	1,788	35	2,427	338	120	13,066
	1891-92	8,209	...	79	70	1,256	40	2,965	351	804	13,774
	1892-93	183	4	189	14	33	46	3,283	315	1,069	5,136

a Rs. 13,000 were omitted from column 2 of the annual return.
b Rs. 11,234 ditto ditto.

STATEMENT No. VII—continued.

1	2	3	4	5	6	7	8	9	10	11	12
		Works.								Establishment.	
		Ornamental Gardens.		*Nurseries.*		*Plantations and Afforestation.*		*Groves and Avenues.*			
District.	Year.	Maintenance and repairs of existing Gardens.	Extension of Gardens.	Maintenance and repairs of existing Nurseries.	Extension of Nurseries.	Maintenance and repairs of existing Plantations and Afforestation.	Extension of Plantations and Afforestation.	Maintenance and repairs of existing Groves and Avenues.	Extension of Groves and Avenues.	General Supervising Establishment, including Office Establishment.	Total.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Delhi Municipality ...	1892-93	9,029	...	...	...	621	...	1,608	...	...	11,258
Jalandhar	1890-91	2,866	...	1,201	...	53	...	5,683	473	...	10,276
	1891-92	3.079	...	1,248	14	...	108	5,122	442	...	10,013
	1892-93	2,875	...	1,311	8	41	...	4,173	543	...	8,951
Ludhiána	1890-91	2,061	...	1,729	...	...	...	4,736	79	168	8,773
	1891-92	2,627	...	2,023	...	...	...	2,660	...	168	7,478
	1892-93	2,113	...	2,135	...	...	...	3,151	...	197	7,596
Ráwalpindi	1890-91	1,621	...	233	...	...	...	250	...	...	2,104
	1891-92	1,276	...	222	...	...	..	731	36	...	2,265
	1892-93	1,192	...	141	...	...	...	229	...	...	1,562
„ Municipality	1890-91	2,706	...	..	...	...	...	289	...	120	3,115
	1891-92	3,239	72	...	...	...	...	342	...	263	3,916
	1892-93	2,957	...	...	...	...	...	610	...	...	3,567
Gujrát	1890-91	1,227	...	...	...	...	...	2,116	...	116	3,459
	1891-92	1,451	...	60	..	...	...	1,979	...	480	3,970
	1892 93	1,115	..	177	...	...	...	2 357	...	480	4,129
Gurdáspur	1890-91	2,065	...	546	...	...	...	4,772	...	...	7,383
	1891 92	2,052	...	813	...	...	...	4,628	...	...	7,493
	1892-93	2,057	...	657	...	...	...	4,902	...	...	7,616
Umballa	1890-91	3,947	...	58	...	...	...	2,581	...	...	6,586
	1891-92	2,661	..	...	a 120	...	...	..	3,789	...	6,570
	1892-93	5,000	...	620	...	...	...	4,000	580	...	10,200
Siálkot	1890-91	2,349	...	1,130	...	...	...	5,743	...	1,671	10,893
	1891-92	2,400	...	531	48	...	...	2,162	2,592	2,200	9,933
	1892-93	3,026	...	637	...	...	...	2,495	2,454	2,072	10,684
Hoshiárpur	1890-91	1,245	...	216	114	...	...	6,214	...	372	8,161
	1891-92	1,831	...	288	50	...	...	6,070	...	390	8,129
	1892-93	1,357	...	288	42	...	...	6,130	...	371	8,188
Simla	1890-91	6,476	...	706	361	3,175	...	...	...	4,311	15,029
	1891-92	6,056	...	855	765	2,407	...	...	...	4,716	14,799
	1892-93	7,311	...	516	...	3,324	...	...	...	4,393	15,544
Hazára	1890-91	120	...	321	...	221	...	72	...	...	734
	1891-92	120	...	214	78	200	16	72	...	...	700
	1892-93	120	...	359	31	220	...	112	...	...	842
„ Municipality ...	1890-91	1,592	...	...	...	...	...	...	...	...	1,592
	1891-92	1,670	...	...	..	...	...	...	..	..	1,670
	1892-93	1,713	...	..	...	...	...	...	...	...	1,713
Kángra	1890 91	878	...	754	...	...	...	1,420	434	236	3,722
	1891-92	991	...	406	25	...	...	821	1,100	252	3,595
	1892-93	986	...	248	90	...	...	700	1,500	252	3,776
„ Municipality ...	1890-91	208	...	389	...	...	...	...	...	...	597
	1891 92	244	...	382	100	...	...	...	...	238	964
	1892-93	192	...	139	...	...	...	...	...	263	894
Total ...	1890-91	1,10,442	1,306	14,313	671	7,992	53	89,623	7,177	24,244	2,55,821
	1891-92	1,22,527	2,366	15,341	2,971	5,969	519	93,867	14,592	22,155	2,80,307
	1892-93	1,35,300	2,153	14,984	422	6,627	46	96,861	16,845	20,208	2,93,446

(*a*). Erroneously shown in column 9 of annual return for 1891-92.

STATEMENT No. VII—continued.

Expenditure on Arboriculture in the Canal Divisions during the years 1890-91 *to* 1892-93.

1	2	3	4	5	6	7	8	9	10	11	12
		Works.								Establishment.	
		Ornamental Gardens.		*Nurseries.*		*Plantations and Afforestation.*		*Groves and Avenues.*			
Canal Division.	Year.	Maintenance and repairs of existing Gardens.	Extension of Gardens.	Maintenance and repairs of existing Nurseries.	Extension of Nurseries.	Maintenance and repairs of existing Plantations and Afforestation.	Extension of Plantations and Afforestation.	Maintenance and repairs of existing Groves and Avenues.	Extension of Groves and Avenues.	General Supervising Establishment, including Office Establishment.	Total.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bári Doáb Canal, 1st Division.	1890-91	...	...	...	...	3,493	1,070	73	...	731	5,367
	1891-92	...	...	...	...	5,970	356	689	...	2,400	9,415
	1892-93	...	...	...	...	1,626	2,161	1,344	54	1,992	7,177
Bári Doáb Canal, 2nd Division.	1890-91	245	...	...	...	1,062	...	509	152	344	2,312
	1891-92	659	...	...	...	2,445	375	2,018	280	...	5,777
	1892-93	60	...	...	...	2,209	...	...	...	...	2,269
Bári Doáb Canal, 3rd Division.	1890-91	51	...	...	...	1,849	1,685	595	300	...	4,480
	1891-92	50	...	...	50	4,673	604	500	200	...	6,077
	1892-93	...	...	...	...	4,923	...	...	180	...	5,103
Upper Sutlej Division, Inundation Canals.	1890-91	...	...	...	...	...	...	992	474	...	1,466
	1891-92	...	...	...	...	2,072	...	...	...	...	2,072
	1892-93	...	...	...	...	2,679	...	...	...	...	2,679
Multan Canals Division.	1890-91	...	...	155	390	356	213	3,140	181	...	4,345
	1891-92	...	...	262	811	3,558	384	627	350	...	5,992
	1892-93	...	...	20	72	2,730	150	1,597	651	...	5,220
Dera Gházi Khan Division, Indus Canals.	1890-91	...	...	462	...	...	...	3,934	359	127	4,882
	1891-92	...	...	338	...	...	...	3,569	259	163	4,329
	1892-93	...	...	354	...	...	...	2,770	272	126	3,522
Muzaffargarh Canals Division.	1890-91	...	...	...	...	...	...	2,441	...	...	2,441
	1891-92	...	...	...	...	...	...	1,822	...	...	1,822
	1892-93	...	...	...	...	...	...	1,824	...	...	1,824
Western Jumna Canal, Karnál Division.	1890-91	251	...	561	...	598	...	2,175	1,039	...	4,624
	1891-92	383	...	708	115	341	...	3,665	767	...	5,979
	1892-93	1,378	...	546	1,572	124	1,621	2,711	1,166	...	9,118
Western Jumna Canal, Delhi Division.	1890-91	...	...	1,081	...	1,412	80	...	2,942	...	5,515
	1891-92	...	...	468	47	2,418	115	...	1,464	...	4,512
	1892-93	2,292	...	375	199	527	1,212	...	896	..	5,501
Western Jumna Canal, Hissár Division.	1892-93	...	...	...	986	...	122	...	100	...	1,208
Sirhind Canal, Ferozepore Division.	1890-91	115	...	190	35	850	3,521	6,139	300	...	11,150
	1891-92	584	...	771	64	5,691	1,563	1,202	107	1,470	11,452
	1892-93	954	...	134	...	10,447	984	509	..	338	13,366
Sirhind Canal, Ludhiána Division.	1890-91	...	...	579	582	...	2,107	1,084	3,076	232	7,660
	1891-92	...	...	733	...	1,079	1,730	1,590	1,639	...	6,771
	1892-93	...	...	792	...	1,835	1,276	1,437	2,713	...	8,053
Sirhind Canal, Patiála Division.	1890-91	...	...	2,298	53	2,290	4,287	4,654	5,778	...	19,369
	1891-92	...	...	1,140	...	2,241	718	5,300	3,079	...	12,478
	1892-93	...	...	...	...	8,259	524	...	61	...	8,844
Chenáb Canal, 1st Division.	1890-91	...	...	...	601	...	383	...	...	...	984
	1891-92	...	...	300	...	100	666	100	200	40	1,406
	1892-93	...	...	300	330	500	1,799	100	700	211	3,940
Chenáb Canal, 2nd Division.	1890-91	...	...	...	50	707	...	2,500	40	...	3,297
	1891-92	...	...	...	847	...	1,628	411	...	498	3,384
	1892-93	...	...	...	1,240	...	1,160	...	1,518	...	3,918
Swát River Canal Division.	1890-91	...	...	...	...	3,049	...	...	1,708	...	4,757
	1891-92	...	...	...	...	4,308	...	...	185	...	4,493
	1892-93	...	...	...	...	4,158	...	...	...	...	4,158
Total ...	1890-91	662	...	5,326	1,621	15,675	13,346	28,236	16,349	1,434	82,649
	1891-92	1,676	...	4,720	1,934	34,896	8,139	21,493	8,530	4,571	85,959
	1892-93	4,684	...	2,521	4,399	40,017	11,009	12,292	8,311	2,667	85,900

STATEMENT No. VII—concluded.

Expenditure on Arboriculture in the Provincial Divisions during the years 1890-91 *to* 1892-93.

1	2	3	4	5	6	7	8	9	10	11	12
		Works.								Establishment.	
		Ornamental Gardens.		*Nurseries.*		*Plantations and Afforestation.*		*Groves and Avenues.*			
Provincial Division.	Year.	Maintenance and repairs of existing Gardens.	Extension of Gardens.	Maintenance and repairs of existing Nurseries.	Extension of Nurseries.	Maintenance and repairs of existing Plantations and Afforestation.	Extension of Plantations and Afforestation.	Maintenance and repairs of existing Groves and Avenues.	Extension of Groves and Avenues.	General Supervising Establishment, including Office Establishment.	Total.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Peshawar Division ...	1890-91	...	...	65	600	...	...	4,349	889	...	5,903
	1891-92	...	...	200	732	...	...	4,514	1,667	...	7,113
	1892-93	...	...	468	84	...	...	3,618	1,237	1,480	6,887
Rawalpindi Division ...	1890-91	...	...	270	168	...	...	6,133	3,950	...	10,521
	1891-92	72	...	216	...	...	...	8,442	1,180	...	9,910
	1892-93	72	...	240	20	...	...	6,327	350	...	7,009
Kohat North-West Frontier Road Division.	1890-91	...	...	...	...	...	...	3,589	...	...	3,589
	1891-92	...	...	...	...	...	...	789	...	...	789
	1892-93	...	...	...	...	...	...	743	146	...	889
Gujranwala Independent Sub-Division	1890-91	...	...	...	...	...	...	1,062	...	...	1,062
	1891-92	...	...	...	864	...	...	2,946	...	...	3,810
	1892-93	...	...	...	186	...	...	1,818	...	...	2,004
Jalandhar Division ...	1890-91	83	...	208	108	...	...	a 2,968	a 1,443	195	a 5,005
	1891-92	58	...	613	190	...	...	3,786	976	260	5,883
	1892-93	55	...	795	535	...	...	3,732	1,300	414	6,831
Simla Division... ...	1890-91	537	5,117	...	...	...	...	...	...	...	5,654
	1891-92	3,716	...	...	...	...	...	...	...	...	3,716
	1892-93	6,303	...	...	...	...	...	...	...	...	6,303
Amballa Division ...	1890-91	...	...	...	...	...	...	1,800	...	...	1,800
	1891-92	...	...	...	...	...	...	2,319	197	...	2,516
	1892-93	...	...	...	...	...	...	2,403	...	...	2,403
Delhi Division	1890-91	...	...	...	...	...	...	1,153	...	300	1,453
	1891-92	...	...	...	...	...	...	1,790	282	300	2,372
	1892-93	...	...	...	...	...	...	1,530	213	300	2,043
Dera Ismail Khan Division.	1890-91	...	...	180	...	...	...	1,137	...	...	1,317
	1891-92	...	...	170	10	...	...	1,098	103	...	1,381
	1892-93	...	...	105	...	415	...	198	...	281	999
Dera Ghazi Khan Division.	1890-91	...	...	...	...	...	...	1,544	...	...	1,544
	1891-92	...	...	...	100	...	...	2,718	35	84	2,937
	1892-93	...	...	...	...	...	...	2,596	40	144	2,780
Lahore Division ...	1890-91	350	319	...	...	...	...	2,884	871	...	4,424
	1891-92	588	296	104	292	...	...	3,711	300	...	5,291
	1892-93	471	155	205	120	...	...	4,153	601	...	5,705
Amritsar Division ...	1890 91	...	...	...	...	...	...	1,326	234	...	1,560
	1891-92	...	...	...	...	...	...	1,197	74	...	1,271
	1892-93	...	...	...	...	...	...	1,200	380	52	1,632
Multan Division ...	1890-91	...	...	24	12	...	...	144	287	60	527
	1891-92	...	...	24	...	...	...	216	144	60	444
	1892-93	...	...	5	...	...	...	1,009	48	60	1,122
Total ...	1890-91	970	5,436	747	888	...	...	28,089	7,674	555	44,359
	1891-92	4,434	296	1,327	2,188	...	...	33,526	4,958	704	47,433
	1892-93	6,901	155	1,818	945	415	...	29,327	4,315	2,731	46,607

(a). Rs. 220 and Rs. 70 which were wrongly shown under "Plantations and Afforestation" during 1890-91 have now been correctly transferred to column 9.

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